



# POLICIES, PROCEDURES & GENERAL DESIGN REQUIREMENTS





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## LIST OF ACRONYMS

- Agreement** = Murfreesboro Water & Sewer Department's Standard Development Contract
- BMP** = Best Management Practice; involving stormwater construction site runoff and post-construction water quality treatment and/or control.
- Board** = Murfreesboro Water & Sewer Board
- CAD** = Computer Aided Design; digital plans format.
- City** = City of Murfreesboro, TN
- Contract** = Murfreesboro Water & Sewer Department's Standard Development Contract
- County** = Rutherford County, TN
- CUD** = Consolidated Utility District of Rutherford County. A potable water provider bounding MWSD's service area.
- Department** = Murfreesboro Water & Sewer Department
- Developer** = Developing Person or Entity improving real property in the City of Murfreesboro
- DIP** = Ductile Iron Pipe
- Director** = Director of Murfreesboro Water & Sewer Department
- EPSC** = Erosion Prevention and Sediment Control
- FOG** = Fats, Oils and Grease
- Guidelines** = MWSD Policies, Procedures and General Design Requirements
- LOC** = Letter of Credit
- Master Plan** = Development plan indicating plan of services for potable water, repurified water, sanitary sewer and storm drainage and stormwater BMP's; indicating subdivision of property; proposed road network and building footprints if non-residential in nature.
- MS4** = Municipal Separate Storm Sewer System
- MWSD** = Murfreesboro Water & Sewer Department
- NAD83** = North American Datum 1983
- NAVD88** = North American Vertical Datum 1988
- NASSCO** = North American Sanitary Sewer Companies
- NPDES** = National Pollutant Discharge Elimination System
- O&M** = MWSD's Operation and Maintenance Division
- PACP** = standardized televised video inspection protocol developed by NASSCO.

**Plan** = MWSD's 201 Wastewater Facilities Plan. A long-term plan indicating the boundaries of MWSD's sanitary sewer service area.

**PVC** = Polyvinyl Chloride

**SAMP** = Sub-basin Area Master Plan

**SFU** = Single Family Unit. An average or median value used to calculate expected demand or loading on potable and repurified water, sanitary and storm sewerage capacity

**SWPPP** = Stormwater Pollution Prevention Plan

**TCA** = Tennessee Code Annotated

**TDEC** = Tennessee Department of Environment & Conservation

**TMDL** = Total Maximum Daily Load

**TSS** = Total Suspended Solids

**UGB** = City of Murfreesboro Urban Growth Boundary

# **SECTION 1 GENERAL PROCESS INFORMATION**

## ***1.1 Purpose & Authority***

The purpose of this Policies, Procedures and General Design Requirements guidelines manual (“Guidelines”) is to provide a guide to the Murfreesboro Water & Sewer Department (“MWSD”) procedures for handling the multitude of service requests received. This Manual will also provide a listing of the general design criteria for each of the three types of systems the Department operates and maintains; domestic water, sanitary sewer, and repurified water. Additionally, MWSD administers the City’s stormwater utility and inspects construction sites and privately operated and maintained stormwater quality BMP’s.

These guidelines are to be used in conjunction with the Murfreesboro City Code Chapters, 16, 23, 27 ½, 29 and 33 regulating Water, Sanitary Sewer, Repurified Water and Stormwater, as well as MWSD’s Standard Technical Specifications & Drawings, Stormwater Planning and Low Impact Design Guide and Stormwater Controls Manual for preparing the plans for the various systems. This guide is intended to complement the City of Murfreesboro’s Subdivision Regulations and Standard Street Specifications.

See Figure 1. for a summarized checklist of MWSD’s submittal requirements.

All things considered, Federal, State and Local laws control and govern the ability for the Murfreesboro Water & Sewer Department to operate, manage and extend the City’s potable water, repurified water, sanitary sewer and storm sewer systems. These laws and any references made thereto in this document are subject to change without notice. All parties interested in accessing MWSD utility service should double-check all pertinent references to said laws or codes and should not rely on this document to be fully consistent or integrated with other City Department standards or specifications, particularly dealing with the development of property in the City of Murfreesboro.

This guide is an attempt to fairly and equitably inform all interested parties as to what is required to receive utility service offered by the Murfreesboro Water & Sewer Department and provide guidance in the process of plans approval. Questions should be directed to MWSD’s Engineering Dept. at 615-848-3200 to answer questions or provide clarification. MWSD staff expects due diligence and review of this manual to be performed by inquisitors.

## ***1.2 Defined Service Area and Plan of Service***

The Murfreesboro Water & Sewer Department (MWSD) provides domestic water, sanitary sewer, repurified water service, and stormwater quality BMP’s to all properties within its defined service area boundaries. For detail maps visit the Department’s website at [www.murfreesborotn.gov](http://www.murfreesborotn.gov) and look under City Departments – Water & Sewer Department, or for confirmation of service area, the applicant shall either visit the Department’s Engineering Annex, located at 220 NW Broad St. Murfreesboro, TN, or call (615) 848-3200 with a location of the proposed project.

The Department maintains potable water and repurified system master plans and maintains a 201 Wastewater Facilities Plan (“Plan”) for sanitary sewer. Some sub-basins have been studied to a finer level of detailed study through a Sub-basin Area Master Plan (SAMP). The Department also maintains and administers an NPDES Phase 2 Stormwater Permit issued by the Tennessee Department of Environment and Conservation (TDEC).

In areas which have not been studied and which do not have a specific plan of service, the preparation of a service feasibility study or a Sub-basin Area Master Plan (SAMP) may be required. This additional detail will determine whether the existing MWSD facilities are adequate to serve the needs of the proposed development at build out or whether new MWSD facilities need to be constructed to handle the additional demands. In these cases the developer will be required to deposit the projected cost of the study with the Department in advance. The developer will be responsible for the full cost of the study, if required by the Department. If the cost of the study is less than the deposited amounts, the difference will be returned to the developer upon completion of the study. If the deposit is insufficient to cover all costs for preparing the study, the developer will be required provide the deficient amount upon completion of the study. The Department reserves the right to perform the study.

**NOTE: Sanitary sewer pumping stations are not a guaranteed approved means of connection to the sanitary sewer system. See Section 5.11 for guiding principles that affect the decision of allowing a pumping station as a development solution.**

### ***1.3 Service Application and Verification of Service***

A request for utility service from the Murfreesboro Water & Sewer Department is not always a straight-forward process. Several simultaneous approval tracks and a largely iterative process may be required, especially for larger developments on the periphery of MWSD’s system. The following elements are identified as a general guide as to what is expected by the Department in requesting service and verifying whether service is available:

#### **1.3.1 Inquiry for Service to City of Murfreesboro Water & Sewer**

In the event a proposed development site is desirous of obtaining potable water, repurified water, or sanitary sewer service from the Murfreesboro Water & Sewer Department and no existing MWSD infrastructure adjoins the property planned for development, the Developer must inquire in writing whether potable water, repurified water and /or sanitary sewer is available to serve said property.

MWSD will review the property location and the major milestones required prior to MWSD issuing a “Will Serve” letter as defined in Section 1.3.3.

The following categories and associated questions are representative of typical queries affecting the decision of MWSD to issue a “Will Serve” letter:

- 1) Proposed site is inside MWSD’s 201 Planned Service Areas and:
  - a) Is the proposed site inside the Murfreesboro City Limits or favorable to Annex into the Murfreesboro City Limits? **(Policy amended by adding language; Approved by Board Feb. 16, 2016 and City Council on March 3, 2016; see Amendment No. 2, added language in bold)**
  - b) Is the proposed site inside the City’s Urban Growth Boundary and favorable to be served as an outside the City Sewer Customer? **(Policy amended by adding language; Approved by Board Feb. 16, 2016 and City Council on March 3, 2016; see Amendment No. 2, added language in bold)**
- 2) Proposed site is affected by MWSD’s 201 Planned Improvements and:
  - a) Is the 201 Planned improvement considered a priority to MWSD?
  - b) Has a detailed Sub-basin Area Master Plan (“SAMP”) been completed as pertaining to proposed development site?
  - c) Are offsite property owners favorable to donating easements to the proposed development?
- 3) Downstream MWSD infrastructure determination of handling increased loading of proposed development:
  - a) Does the site conform to the densities presumed in MWSD’s sanitary sewer hydraulic model?
  - b) Has a flow monitoring study been performed in downstream infrastructure that would support planned loading?
- 4) Funding of offsite improvements are secured by Developer or jointly agreed upon by Developer and City.

The Developer may be required to provide satisfactory evidence of off-site easement agreements, Murfreesboro Planning Commission and Rutherford County Planning Commission approvals, hydraulic loading calculations in conformance with system capacity and development master plans prior to MWSD considering further consideration of providing service to a proposed development. MWSD makes no guarantee that the Murfreesboro Water & Sewer Board or the Murfreesboro City Council will approve any development for water or sewer service even if all requirements established by MWSD staff are met.

### **1.3.2 Approval Required for Utility Service Outside the Murfreesboro City Limits**

If the proposed development is not included within the City Limits of Murfreesboro, the developer must file a formal request for annexation into the City pursuant to Section 33-2.1.1 of the Murfreesboro City Code. The written request for annexation must be submitted to the City’s Planning Director for action by the City Planning Commission and Murfreesboro City Council. The request must adhere to the requirements of the Planning Department accompanied with the appropriate fees as determined by the Planning Department. Plan of Service should be confirmed prior to commencing the annexation process if utility service is the impetus behind the annexation request.

The City Planning Commission and City Council will make a determination as to annexation in the ordinary course of business. **Annexation into the City does not automatically confer the rights to any utility service provided by MWSD.**

Should annexation not be recommended service as an outside the city customer may be possible by written agreement. **(Policy amended by adding language; Approved by Board Feb. 16, 2016 and City Council on March 3, 2016; see Amendment No. 2, added language in bold)**

Denying annexation does not automatically confer rights to any utility service as an outside the city customer. Service as an outside the city customer must be approved by the City Planning Commission and City Council.

In the event that service is approved as an outside the City customer, the Developer must receive approval of the proposed development by both the City of Murfreesboro Planning and Engineering Department as well as the Rutherford County Planning and Engineering Department. Service by MWSD outside the City's Urban Growth Boundary is highly unlikely.

### **1.3.3 "Will Serve" Request Letter**

For proposed developments within the boundaries of the City of Murfreesboro, and having sewer adjoining the proposed development site, or having satisfied inquiry for service request requirements defined in Section 1.3.1, the developer must provide a written request for a "Will Serve" letter from the Department. The Developer must provide along with the written request for a "Will Serve" letter including but not limited to the following:

- 1) Development Master Plan or Site Plan with preliminary hydraulic loading calculations
- 2) Offsite easement agreements (if infrastructure does not already adjoin site).
- 3) Verified invert elevation of point of connection manhole.
- 4) Preliminary profiles indicating extent of gravity sewer service capability.
- 5) Pumping station report and location, in the event that gravity service cannot be achieved for the entire site.
- 6) Temporary flow monitoring report may be required in the event that a recent study (w/in 2-yrs of time of request) is not available.

### **1.3.4 Development Master Plans or Development Site Plans**

Accompanying a request for a "Will Serve" letter, the Developer shall supply two (2) sets of plans (development master plans or development site plan – see Section 2.1) showing the location of the service requested. At this point it will be determined whether the request will be handled as a "subdivision project" (typically single family residential development) or a "non-single family unit" project, typically multifamily, commercial and/or industrial developments.

The development master plan is required to indicate the proposed utilities and their points of connection to the existing MWSD facilities. Conceptual sizing of the water and sewer systems should be shown along with dwelling unit densities and demand quantities. The normal information required on tentative tract maps is also required.

For potable water and repurified water service, the verification of service must take into account the respective system master plans for these utilities.

For sanitary sewer the verification of service must take into account the basin requirements of the 201 Wastewater Facilities Plan (latest edition) and any Sub-basin Area Master Plans (SAMP) that have been approved and adopted by MWSD.

Preliminary profiles of the sanitary sewer main through the development are required with the sanitary sewer development master plan. The purpose of these profiles are to demonstrate whether the entire site can be serviced by means of a gravity main. Pumping stations for sanitary sewer are not an automatically approved means for connection to the sanitary sewer system. If digital mapping is utilized for the profiles, ground-truthing of topographic elevations are required. Invert elevations of tie-in manholes are required to be field verified along with submission of preliminary profiles. Vertical elevation datum is to be consistent with the requirements defined in section 2.3.

### **1.3.5 Offsite Easement Agreements and Public Purpose**

Offsite Easements Agreements will be the responsibility of the Developer, with assistance in their acquisition only provided by the Department if a public purpose is identified by the Director. Please note that MWSD does not automatically recommend the use of eminent domain to acquire such easements even if a public purpose is identified. The project must be identified as a priority to the Department and demonstrate a benefit to the Department with regards to cost and area of service. Even in the event that the Department recommends use of eminent domain, the ultimate authority rests with the Murfreesboro City Council. The Council reserves the right to use its condemnation power solely at its discretion and pleasure. All costs associated with off-site improvements are the responsibility of the Developer.

All off-site easements must be acquired prior to the Department reviewing any Construction Drawings. The standard offsite easement agreement is included as Figure 2.

If a potable water, sanitary sewer or repurified water main cannot be located in an existing right of way, easement or other public property, the Department does not consider or recommend use of eminent domain unless the proposed extension satisfies the definition of a public purpose as defined below. Note: provisions of Public Chapter 863 (AN ACT to Amend T.C.A., Title 1; Title 6; Title 7; Title 11; Title 12; Title 13; Title 29; Title 43; Title 49; Title 54; Title 64; Title 65; Title 68 and Title 69, relative to the power and use of eminent domain and property acquired by eminent domain), effective July 1, 2006, affect the present practice of the Department acquiring easements and assisting a developer with acquiring easements. According to PC 863, the use of eminent domain by

a public utility can only be used for a project that is for a public purpose. Therefore, before the powers of eminent domain are used by the City for acquiring easements for a project, staff must establish it to be for a public purpose. The Department believes a project is clearly for a public purpose under the following conditions:

1. When a sanitary sewer segment is defined in the 201 Wastewater Facilities Plan (“Plan”), most current edition.
2. When a sanitary sewer segment is defined in an existing Sub-basin Area Master Plan (“SAMP”) as approved by the Department.
3. When a sanitary sewer segment is not defined in the Plan or SAMP but is a logical extension of the public sewer that will provide sanitary sewer service for a drainage basin or sub-drainage basin either to properties along the route of the sewer or properties beyond the proposed terminus of the sewer extension.
4. When a sanitary sewer segment is not defined in the Plan or SAMP but is necessary because of a health risk due to multiple septic tank system failures.

There may be other circumstances when a proposed sewer extension can be characterized as being for a public purpose but these will be the general parameters followed by the Department.

### **1.3.6 Determination of Loading and Capacity of Existing or Proposed Sanitary Sewer Infrastructure**

All proposed areas of development must be served by existing gravity sewer, sanitary sewer lift stations and the publicly owned treatment works (POTW) sewage treatment plant. Some developments may be required to extend off-site sewer to their development sites or off-site improvements yet to be constructed by the Department or other developing entities.

In some instances, the determination of existing or proposed facilities may not be known as capable of handling the increased loading corresponding to a proposed development. In such instances, a capacity study will be required to be conducted by the Developer. The Developer shall be required to enter into an agreement for conducting temporary flow monitoring at a location determined by MWSD and shall compensate the Department for services associated with incorporating these flows into MWSD’s existing sanitary sewer hydraulic model.

The Developer shall be required to reimburse all direct and indirect costs to MWSD for conducting this study. A cost estimate shall be provided as part of the aforementioned agreement. The Developer’s engineer shall provide MWSD with the anticipated hydraulic loading and supporting calculations for the proposed development.

The model agreement is included as Figure 3.

## **1.4 Development Construction Drawings**

### **1.4.1 Residential and/or Commercial Development Projects**

After receiving a “Will Serve” letter as approval for receiving service from MWSD, construction drawings will be required for submittal.

MWSD recommends that two (2) sets of initial construction drawings be provided to our Department directly in order to receive expedited comment and review as to possible deficiencies or required revisions.

MWSD will complete the plan checks, providing that all of the required information is provided and that all of the required information submitted is complete and sufficient to complete the review:

- The first plan check of the utility construction drawings within fifteen (15) working days of the submittal date,
- The second check should be completed within ten (10) working days, and
- Any subsequent check should take no more than five (5) working days.

There may be variances in this schedule due to a number of factors. The Department cannot guarantee these processing intervals, but they are general guidelines. At the completion of the second plan check, the plans should be complete enough that the required construction costs estimates and agreements can be prepared and sent to the Department for review.

Please note that prior to submitting **FINAL** residential and/or commercial construction drawings to the Murfreesboro Water & Sewer Department, standard protocol currently instructs that construction drawings be submitted to the City of Murfreesboro Planning and Engineering Department for their approval. After their approval and signature, they provide all sets of construction drawings to MWSD’s Engineering Department for **FINAL** approval and signature. **FINAL** signatures of construction drawings are provided after the review and comment process has been undertaken.

The agreements, bonds, and required fees must all be executed and endorsed properly by the developer and returned to the Department before the final plans can be signed by the Department. The developer or their engineer must provide MWSD with a digital copy of the plans per the digital submission criteria described in section 2.3.3 of this manual.

Final inspection by the Department can be coordinated by the MWSD Inspector(s). When construction has been successfully completed and the final inspections have been performed, the Department will notify the Developer. The Developer is responsible for the installation of all water, sewer, and repurified water facilities within and/or adjacent to his development to serve their development. All construction must meet the Department’s standards. The Developer shall be responsible for any and all repairs or replacements required to the installed systems for the warranty period defined in Section 1.7 from the date of formal acceptance by the Department.

Note that it is the Department's standard development practice to require that all developments extend sanitary sewer, repurified water and potable water to the limits of the development. These extensions are generally to each of the development's property lines (north, south, east, and west), and at a location deemed most practical for subsequent system extensions. Some projects, due to their size and due to possibly straddling two (2) or more service basins or properties, may be required to extend water and/or sewer to more than one (1) location on a common boundary line of the development.

### **1.4.2 Individual Service/Meter Requests**

Individual service/meter requests are handled in a manner similar to Section 1.4.1, but don't include the Actual Construction Cost affidavit or bonding requirements. Individual service/meter requests must be made in writing and be accompanied by the appropriate plans and required fees. When the plans depicting the service connections are approved, a connection fee worksheet will be prepared and introduced to our Customer Service Department. This connection fee worksheet will include all applicable connection fees, high volume surcharges, meter set fees, and service connection construction fees.

Requests for repurified water service must be accompanied by an executed service application. Once the service/meter application is approved and the installation cost has been paid by the applicant, the service/meter request is forwarded to MWSD's Operations & Maintenance Department for installation of the meter.

If required, the developer will be required to install the necessary power source for sewer lift stations or water pump stations. The developer will also be responsible for applicable control systems, and related telephone and telemetry systems and cables, odor control, and diesel backup generators. Department standards for these installations must be followed with no substitutions allowed.

### **1.5 Utility Construction Start**

See Section 2.5.1 for the requirements associated with receiving a Notice to Proceed for Construction. ~~Contractors must at all times meet the Department's requirements of State of Tennessee Classification MU – Municipal and Utility Construction license holder for water and sewer construction, insurance with a general liability of not less than \$1,000,000, and maintain proper equipment. (Portion of Policy Rev. 8/24/10 by MWSD Board and 9/16/10 by City Council – see Amendment No. 1).~~

See Figure 4 for an approved Insurance Certificate example and correlating endorsement letter.

In some instances, the Developer may be required to post a surety covering the construction costs of certain stream or roadway crossings, costs of offsite utility improvements and associated roadway or offsite property restoration, or covering the costs associated with erosion protection and sediment control BMP's and onsite property restoration prior to issuance of a Notice to Proceed to start construction. The construction items that may warrant this up-front surety include, but are not limited to:

- Construction through or parallel to a stream, creek or river as defined in Chapter 27 ½ of the Murfreesboro City Code.
- Construction through or parallel to a local, State or Federal road.
- Construction adjacent to a waterbody identified on the Tennessee Department of Environment and Conservation 303d list of impaired waterways
- Construction on a site that is identified as a Priority Construction Site as defined in Chapter 27 ½ of the Murfreesboro City Code.
- Construction across property identified under separate ownership from the proposed development or across public right-of-way.
- Offsite and onsite property restoration costs and any public right-of-way off-road restoration or re-build of in-road facilities, including paving, curb and gutter, utilities or sidewalk.

### ***1.6 Construction Estimates and Surety for Final Plat***

Upon approval of the Development Construction Drawings, the Department or its representative, will then review the construction cost estimate provided by the consulting engineer and prepare a total estimate of the water and sewer construction cost. The sum total of the estimate includes the cost of water service lines installed by the Department, cost of connections to the existing systems made by the Department, review and inspection fees, and any other expenses reasonably necessary for providing a complete water and sewer system. This total shall determine the amount of the bond, letter of credit or cash deposit, hereinafter “security”, that will be required of the Developer prior to the approval of the plat for the proposed project.

The Development Contract and Surety Agreement shall require completion of the construction within one (1) year. In addition, security in an amount of not less than 10% of the original estimated water and sewer construction cost or the minimum security amount identified in the table attached to the Development Agreement, whichever is greater, shall remain in full force and in effect for the warranty period defined in Section 1.7 following completion to serve as warranty for proper construction.

In the event the Developer requests the Department to execute the plat prior to the project completion, the Developer shall furnish the Department with (a) Lien Waivers from all material suppliers, (b) Security for the remaining uncompleted estimated construction cost as determined by the Department based on the original estimated cost of construction times the percentage of completion. There is no right to receive this certification which shall be in the sole discretion of the Director of the Department.

**The Department will not sign a Developer’s plat until such time the development meets all the requirements of the Department’s Development Policy Procedures.**

## **1.7 Warranty Period**

The Developer shall be responsible for maintenance and upkeep of all public improvements and water and sewer lines constructed for a period of thirty-six (36) months following the date of written acceptance by the City Engineer.

## **1.8 Department Administration Fees for Developments**

Connection Fees will be calculated as per the applicable sections in Murfreesboro City Code. The Developer should coordinate with the Development Coordinator within the Department for calculation of these fees. Usage charges are available on the Departments website at [www.murfreesborotn.gov](http://www.murfreesborotn.gov) – City Departments – Water & Sewer Department.

Other administrative fees are detailed in Exhibit “A” to the MWSD Development Contract (“CONTRACT”) in Figure 7. and are available from the Department. All applicable fees shall be paid by the applicant prior to the approval of plans, installation of individual services, or at other times as requested by the Department.

The Department will charge the Developer the current review fee rates charged by the State of Tennessee for both water and sewer review and approval. Additionally, force mains and miscellaneous wastewater work will have fees consistent with water lines and miscellaneous review. Excerpts from the approved State Rule are Exhibit A to Figure 7.

The Department will charge the Developer a resident inspection fee on a per linear foot basis as identified in Exhibit “A” attached to the Development Agreement in Figure 7. and as measured on actual footage of water and/or sewer lines installed. The Department will perform video inspections of sewer lines prior to warranty expiration. The Department will charge the Developer on a per linear foot basis as identified in Exhibit “A” attached to the Development Agreement in Figure 7. and as measured on actual footage of sewer lines video inspected. If the sewer lines being inspected require cleaning prior to the video inspection, jet wash truck services by the Department may be utilized at a charge to the Developer on an hourly basis as identified in Exhibit “A” attached to the Development Agreement in Figure 7. with a one hour minimum charge and the cost of water used. These charges will apply for all jet wash truck services.

The Department will not perform any work associated with the Developer’s project without full payment in advance. This includes such items as water service line installations and system connections.

## **1.9 Policy for Payment of Water & Sewer Connection Fees**

1. Payment of Connection fees by Customers in the Murfreesboro Water Service area.
  - 1.1. Water connection fees are due when an applicant for water service requests service.
  - 1.2. Sewer connections fees are paid at the same time as water connection fees are paid.
2. Payment of fees by Customers outside the Murfreesboro Water Service Area. Only sewer connection fees and charges apply.

- 2.1. An applicant for detached single family residential service shall pay applicable sewer connections charges prior to the final sewer connection being made by the Department. Payment of the fees shall be a condition of receiving a final certificate of occupancy from the Murfreesboro Building and Codes Department.
- 2.2. An applicant for residential service, other than for single family detached service e.g. duplex, triplex, quadraplex, apartments and condominiums and mobile homes, shall pay applicable sewer connection fees at the time application is made for a building permit.
- 2.3. An applicant for sewer service for a commercial or retail use shall pay the then applicable sewer fees at the time application is made for a building permit. Payment of the fees shall be a condition of issuing the permit. If the building is a shell with the potential for multiple units within, only the fee for the shell be paid when the building permit application is made. A sewer connection fee is due for each unit within a single building regardless if the building is serviced by a single meter or meter to each unit or if the building is served by a single sewer connection or multiple sewer connections.
  - 2.3.1. For building shells for commercial service such as retail shops and service establishments with potential for multiple units within, the additional applicable sewer connection fees shall be due at the time application is made for a building permit for the build out of an interior space of the building shell.
- 2.4. An applicant for sewer service for an industrial use shall pay the applicable sewer fees at the time application is made for a building permit. Payment of the fees shall be a condition of issuing the permit.
  - 2.4.1. If the applicable fees cannot be determined because the single family equivalents (SFE ) of the industry cannot be determined to the satisfaction of the Director at the time application is made for a building permit, then payment may be deferred but said fees must be paid prior to issuance of a final certificate of occupancy.
    - 2.4.1.1. If the single family equivalents (SFE) of the industrial discharge used to determine connections fees cannot be determined to the satisfaction of the Director at the time application is made for a building permit, then the Director may recommend an agreement with the industrial user for determining the SFE units and payment of fees which agreement requires the approval of the Board and City Council.

## ***1.10 Departmental Funding Participation***

In the event that a Developer has been required to pay all or a part of the cost of constructing sanitary sewer and waterlines or facilities (hereinafter “improvements”), which improvements become part of the Murfreesboro sanitary sewer and water systems and are available for use and benefit of the customers of the Murfreesboro sanitary sewer

and water system, that Developer may be eligible to be reimbursed a portion of its costs of construction of the said improvements.

Reimbursement shall be allowed only by the City Council after review by the Water and Sewer Department. Cost reimbursement will not be allowed for improvements constructed, on or off-site, for the sole benefit of the development. Costs eligible for reimbursement include labor, equipment, supplies, materials, engineering design, supervision, inspection, legal, and acquisition costs for easements and right-of-way. Fiscal costs, including interest, finance charges, and other similar costs are ineligible for reimbursement.

The Developer requesting reimbursement must enter into a written agreement with the City prior to commencement of construction of any improvements for which reimbursement is sought. This agreement shall set out:

1. A description of the improvement;
2. The estimated total eligible costs, as above defined;
3. The portion of the cost of such improvements for which reimbursement will be allowed. The latter determination shall be based generally upon the difference in sizing or capacity of the line or facility needed for the development and the size or capacity needed for the system as a whole, the cost of "up-sizing." However, the City Council may in its reasonable discretion consider such other factors as are necessary for an equitable sharing of costs of any system improvements so constructed.
4. The Department will not consider participating in cost associated with increased depth of sanitary sewer facilities unless the improvement requested by the Department requires the depth of the facility to exceed twelve (12) feet in depth. The Department will only consider paying additional costs associated with extra depth greater than twelve (12) feet.

Further, prior to dedication and acceptance of the improvements by the City, the Developer requesting reimbursement must present to the City Council a detailed statement of the actual eligible costs and the City Council in its discretion may amend the agreement, and the reimbursement amount, to reflect the actual project costs.

Should a project be eligible for participation by the City due to upsizing of a water or sewer line, the Department reserves the right to publicly bid the project or the portion of the project eligible for participation. Participation in the cost to upsize water and/or sewer lines shall be in accordance with established policies in effect. The Department or Developer can prepare a schedule of upsize participation, based on recent bid results or agreed upon unit pricing, which the Department and the Developer may accept in lieu of publicly bidding, subject to approval of the Water and Sewer Board.

Should the Department participate in serving a development with a larger line according to the City's Master Plan and the project is to be publicly bid, then the Developer shall deposit with the Department security in the amount of the Developer's portion of the

estimated construction cost pursuant to the Development Policy Procedures. Security shall be deposited with the Department prior to the public bid opening. The Department shall invoice the Developer for periodic pay estimates to the Contractor as received, or send on invoice for the total participating amount at the completion of the project.

### **1.11 Facilities Considered Abandoned**

In the event that potable or repurified water or sanitary sewer infrastructure is constructed but is never accepted by the Department through execution of a final cost affidavit for a period of twelve (12) months or more, the infrastructure shall be considered abandoned and require re-televising, re-testing, development of a punch-list of any deficiencies and correction of all deficiencies prior to accepting a final cost affidavit, accepting the warranty surety amount and allowing any service connections. In the event that the infrastructure is considered abandoned, the following items should be expected as part of any acceptance by the Department:

#### Gravity Sewer Main Requirements:

1. Televise the sewer main through a PACP certified company. If the camera goes under water during the initial televising, flush the lines, pour lightly dyed water into the mains and re-televise prior to submitting a DVD of the mains to the Department for review.
2. In addition to the video, our inspectors will be making notes of their visual inspection and compiling punch list items in need of correction to the manholes.
3. During our review of the video, we would decide if there are any sags along the sections of main that would not be acceptable.
4. If more than one sag is found to be un-acceptable within a certain line section, then this section of sewer main, from manhole to manhole will be dug up and replaced.
5. Once all punch list items are repaired, the sewer mains must pass an air & mandrel test and the manholes must pass the vacuum test.
6. If they do not pass the tests then the contractor must repair the lines or manholes, per our specifications and re-test until all tests are passed.
7. If any point repairs or dig ups are made on the main or service laterals, that all crushed stone backfill must be used.
8. If lots are re-configured – then the entire main line must be replaced along with new service laterals to the center of each lot.

Sewer Force Main Requirements: Sewer force main must be retested the entire length per our standard specifications.

#### Pump Station Requirements:

1. Pump station supplier must make an evaluation and provide a certification that the pumps, valves, appurtenances and the station as a whole meet factory specifications and performance criteria.

2. Must purchase or provide an extended manufacturer's warranty for a period of three (3) years or provide 100% surety in the form of a letter of credit for the pump station replacement.

General Contract Requirements:

1. A new contract must be executed with the Department.
2. After all of the above is completed and the gravity sewer main, sewer force main and pump station have passed the testing requirements, the standard requirements of our contract will apply. Surety will be reset for a three year warranty period and an amendment must be signed for potential increased surety (greater than 10%) for the pump station construction costs and for the gravity sewer and force main.

**FIGURE 1.**  
**SUBMITTAL REQUIREMENTS FOR LOCAL REVIEW AUTHORITY**  
**FOR WATER AND SEWER MAIN EXTENSIONS**

Project Name \_\_\_\_\_

**Inquiry for Service to Murfreesboro Water & Sewer Department**

- Project Within MWSD 201 Plan Area \_\_\_\_\_
- Site Affected by 201 Plan or SAMP Improvement \_\_\_\_\_
- Annexation or Outside the City Customer Application \_\_\_\_\_
- Project Outside Urban Growth Boundary \_\_\_\_\_
- Offsite Improvements Required \_\_\_\_\_
- Hydraulic Loading Calcs Provided and Capacity Study Agreement \_\_\_\_\_

**Prior to Issuing a “Will Serve” Letter**

- Development Master Plan Provided \_\_\_\_\_  
     Water/Repurified System Master Plan Conformance \_\_\_\_\_  
     201 Wastewater Facilities Plan Conformance \_\_\_\_\_  
     Sub-basin Area Master Plan Conformance (if appl.) \_\_\_\_\_  
     Verified Existing M.H. Invert @ Point of Connection \_\_\_\_\_  
     Verified Aerial Topo or Ground Topo (for sewer) \_\_\_\_\_
- Offsite Easement Agreements \_\_\_\_\_
- Request Letter \_\_\_\_\_
- Executed Contract \_\_\_\_\_
- Participation Requested \_\_\_\_\_
- Capacity Confirmed – MWSD Model & Flow Monitoring Results \_\_\_\_\_

**Prior to Construction Drawing Approval**

- Construction Drawings & Plans (Scale > 1”= 20’ & < 1”= 60’)  
     (2-Copies, Plan & Profile w/ Storm Drainage Structures  
     w/ Approval Stamp on Sheets) \_\_\_\_\_
- Construction Cost Estimate (Separate Water, Repurified & Sewer) \_\_\_\_\_
- Hydraulic Calculations:           Sewer Figure 19. of Design Guide \_\_\_\_\_  
   Water from Nearest Hydrant \_\_\_\_\_  
   (Use Fire Flow of 1000 GPM) \_\_\_\_\_
- Review Fee (See Attachment 1 of Contract) \_\_\_\_\_
- Approved CUD Water Plans & Hydraulics \_\_\_\_\_
- Engineering Report (for Pumping Stations) \_\_\_\_\_
- Grease Interceptor Calculations \_\_\_\_\_

**Prior to Notice to Proceed for Construction**

- Contractor’s License & Insurance \_\_\_\_\_
- Sanitary Sewer Cut Sheets (Site Graded to Subgrade) \_\_\_\_\_
- Staking in place (Lot Corners & Sewer w/ Offsets) \_\_\_\_\_
- Critical Construction Sureties Required & In Place \_\_\_\_\_

**Prior to Releasing Building Permit**

- Connection Fees Paid \_\_\_\_\_
- Stormwater Management Plan / Agreement provided \_\_\_\_\_

**Prior to Signing Final Plat**

- *Prior to Water and/or Sewer Main Improvements*  
     LOC for 100% of water and/or sewer improvement estimate and/or  
     LOC for 100% of critical water and/or sewer improvement estimate or \_\_\_\_\_
- *After Water and/or Sewer Main Improvements*  
     LOC for 10% of water and/or sewer improvement estimate \_\_\_\_\_
- *After Water and/or Sewer Main Improvements*  
     Executed Actual Cost Affidavit \_\_\_\_\_  
     Invoice Paid \_\_\_\_\_



**FIGURE 2.**

This Instrument Prepared By:  
David A. Ives, Asst. City Attorney  
City of Murfreesboro  
P.O. Box 1044  
Murfreesboro, TN 37133-1044

Note: Italicized terms will vary depending on the type of easement to be granted.  
All lienholders must sign as well as all owners

**Map \_\_\_\_\_ Group \_\_\_\_\_ Ctl. Map \_\_\_\_\_ Parcel \_\_\_\_\_**

**REPURIFIED WATER, POTABLE WATER OR SANITARY SEWER**  
**EASEMENT AND**  
**TEMPORARY CONSTRUCTION EASEMENT**

FOR AND IN CONSIDERATION of the sum of ONE DOLLAR (\$1.00), cash in hand paid to us, the receipt of which is hereby acknowledged, and for and in consideration of the benefits to accrue to our land of which the hereinafter described parcels of land are a part, the undersigned, \_\_\_\_\_ **(Landowner(s))**\_\_\_\_\_, (hereinafter referred to as "Grantors") have this day bargained and sold and do hereby transfer unto said **CITY OF MURFREESBORO**, a municipal corporation located in Rutherford County, Tennessee, its successors and assigns, a permanent **[POTABLE WATER, REPURIFIED WATER, SANITARY SEWER]** easement and a temporary construction easement in, upon, along, under, through and across the parcel described below, together with all necessary rights of ingress and egress to and from said parcel of land, for the purpose of locating, laying, constructing, installing, servicing, repairing, replacing, enlarging, maintaining, and operating a **[POTABLE WATER, REPURIFIED WATER, SANITARY SEWER] LINE**,

together with all necessary or appropriate fittings, appliances and appurtenances thereto, in, upon, along, under, through and across said parcels of land. Said parcel(s) is/are located in Rutherford County, State of Tennessee, and is/are more particularly described as follows:

SEE EXHIBIT A HERETO

TO HAVE AND TO HOLD said easements unto said **CITY OF MURFREESBORO**, its successors and assigns.

Grantors covenant that they are lawfully seized and possessed of said parcel of land; that they have a good and lawful right to transfer and convey said easements; and that said parcel of land is unencumbered, except for applicable zoning regulations and as otherwise set forth herein.

Grantors further covenant and bind themselves, their heirs, successors and assigns forever to warrant and defend the title to said easements unto said **CITY OF MURFREESBORO**, its successors and assigns, against the lawful claims of all persons.

\_\_\_\_\_ (“Creditor”) is the true and lawful owner and holder of an indebtedness or promissory note dated \_\_\_\_\_ in the amount of \$\_\_\_\_\_, secured by a Deed of Trust of record in \_\_\_\_\_ **Book** \_\_\_\_\_, **Page** \_\_\_\_\_ of the Register’s Office of Rutherford County, Tennessee. Creditor hereby joins herein solely for the purpose of subordinating and does hereby subordinate, the lien of said Deed of Trust to the easements herein and hereby transferred and conveyed to the CITY OF MURFREESBORO; but said Deed of Trust shall not be otherwise affected hereby, and shall continue

in full force and effect as before the execution and delivery hereof, subject and subordinate only to said easements.

Grantors further covenant and bind themselves, their heirs, successors and assigns in title or interest in and to said parcel of land or any part or portion thereof, not to construct or maintain any building or other structure of any kind upon said parcels of land, and not to do or cause or permit to be done upon said parcels of land any other thing or act of any kind whatsoever that will cause or be likely to cause damage or injury to the above referred to force main including its fittings, appliances and appurtenances.

By its acceptance of delivery of this instrument **CITY OF MURFREESBORO** covenants and binds itself, its successors and assigns to repair and restore all fences, if any, that may be required to be cut or to be temporarily removed in, and to clean and remove all surplus dirt, rock and other debris, caused by or resulting from the locating, laying, constructing, installing, servicing, repairing, and maintaining of the said force main, including its fittings, appliances and appurtenances thereto, and also insofar as reasonably practicable, to fill, grade and restore the surface of the land, as related to the construction of the force main.

Wherever used in this instrument, the singular number shall include the plural, the plural shall include the singular, and the use of any gender shall be applicable to all genders.



EXHIBIT A (to FIGURE 2.)  
LEGAL DESCRIPTION

Map \_\_\_\_\_ Group \_\_\_\_\_ Ctl. Map \_\_\_\_\_ Parcel \_\_\_\_\_

**REPURIFIED WATER, POTABLE WATER, OR SANITARY SEWER MAIN**

**EASEMENT:**

Located in the \_\_\_\_ Civil District of Rutherford County, Tennessee.  
Bound on the north by \_\_\_\_\_.

Beginning \_\_\_\_\_ to the point of beginning, containing \_\_\_\_\_  
acre, more or less.

**TEMPORARY CONSTRUCTION EASEMENT:**

Located in the \_\_\_\_ Civil District of Rutherford County, Tennessee.  
Bound on the north by \_\_\_\_\_.

Commencing \_\_\_\_\_ to the Point of Beginning, containing  
\_\_\_\_\_ acre, more or less.

Said temporary construction easement shall cease to exist upon  
completion of this project.

Grantors' source of title being instrument of record in \_\_\_\_ Book  
\_\_\_\_, Page \_\_\_\_\_, at the Register's Office for Rutherford County,  
Tennessee.



Figure 3.

**TEMPORARY FLOW MONITORING AGREEMENT**

**WHEREAS**, the **CITY OF MURFREESBORO** ("City"), acting through its Water and Sewer Department ("Department") and \_\_\_\_\_ ("Developer") entered into a Contract on \_\_\_\_\_, 20\_\_ providing for the temporary flow monitoring of the nearest downstream \_\_\_\_\_ to determine the wet weather capacity of \_\_\_\_\_ ("Contract");

**WHEREAS**, the Department has asked the Developer to reimburse the costs associated with providing a temporary flow monitoring device as provided through the Department's Master Services Agreement with \_\_\_\_\_;

**WHEREAS**, the Developer has asked the Department to analyze the capacity of \_\_\_\_\_ and its ability to accommodate the necessary flow rates for an approximate \_\_\_\_\_ unit development:

**WHEREAS**, the City and Developer now desire to enter into said Agreement.

**NOW, THEREFORE**, be it agreed by City and Developer that:

1. The City intends on directing \_\_\_\_\_ to install an temporary flow-monitoring device in manhole \_\_\_\_\_ for a period of sixty (60) days.
2. The City has an established price for a temporary flow monitor for \$\_\_\_\_\_ per meter per day. This pricing is subject to changing per the conditions of the City's Master Services Agreement with \_\_\_\_\_.
3. The Developer's agrees to reimburse the City all direct costs associated with installing the temporary flow monitor. The flow monitor costs are estimated as \$\_\_\_\_\_. This price does not reflect any costs associated with any possible power or telephone drops. In the event that power or telephone drop costs are incurred, these shall be pass through invoices and added to the estimated amount.
4. The Developer acknowledges that the determination of capacity within \_\_\_\_\_ can only be determined with adequate wet weather data derived from appropriate rain events. As such, the flow monitoring of manhole \_\_\_\_\_ may not yield adequate results within the sixty (60) day time frame if adequate rainfall does not occur.
5. The Developer will reimburse City the actual amount within 10 days after the completion of the sixty (60) day monitoring period.

6. This Agreement shall take effect from and after its execution by all parties.

**DEVELOPER** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Date

\_\_\_\_\_

\_\_\_\_\_

*Date*

*CITY OF MURFREESBORO*

**BY:** \_\_\_\_\_

\_\_\_\_\_

*Date*

**ITS:** \_\_\_\_\_

*Approved as to form.*

\_\_\_\_\_  
Susan Emery McGannon, City Attorney

Figure 4. Certificate of Insurance Example w/ Endorsement Letter

Jun. 29, 2007 1:46PM Miller and Loughry No. 3951 P. 1 <b>ACORD CERTIFICATE OF LIABILITY INSURANCE</b>		(MM/DD/YYYY) 06/29/2007
PRODUCER (615)896-9292 FAX (615)849-1586 Miller & Loughry Insurance and Services Inc P O Box 7001 214 West College Street Murfreesboro, TN 37133-7001		THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.
INSURED BRYANT CONSTRUCTION CO INC 10839 BRYANT RD ROCKVALE, TN 37153-4320		
		INSURERS AFFORDING COVERAGE
		NAIC #
		INSURER A: <b>FCCI Insurance Company</b>
		INSURER B:
		INSURER C:
		INSURER D:
		INSURER E:

**COVERAGES**

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR ADD'L LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
A	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY CLAIMS MADE <input checked="" type="checkbox"/> OCCUR	GL0004173	04/06/2007	04/06/2008	EACH OCCURRENCE \$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC				DAMAGE TO RENTED PREMISES (EA occurrence) \$ 100,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000
A	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS	CA0007252	04/06/2007	04/06/2008	COMBINED SINGLE LIMIT (EA accident) \$ 1,000,000
					BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
	GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN EA ACC \$ AUTO ONLY: AGG \$
A	EXCESS/UMBRELLA LIABILITY <input type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE DEDUCTIBLE RETENTION \$	UMB0004092	04/06/2007	04/06/2008	EACH OCCURRENCE \$ 2,000,000
					AGGREGATE \$ 2,000,000
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below OTHER	001-WC06A-56367	04/06/2007	04/06/2008	WC STATUTORY LIMITS <input checked="" type="checkbox"/> OTHER
					E.L. EACH ACCIDENT \$ 500,000 E.L. DISEASE - EA EMPLOYEE \$ 500,000 E.L. DISEASE - POLICY LIMIT \$ 500,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS  
 PROJECT: JOHN PITTARD ELEMENTARY SCHOOL WATER LINE CONSTRUCTION  
 CITY OF MURFREESBORO IS NAMED AS ADDITIONAL INSURED.

**CERTIFICATE HOLDER**

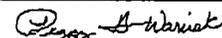
CITY OF MURFREESBORO  
 WATER & SEWER DEPARTMENT  
 P.O. BOX 1477  
 MURFREESBORO, TN 37133-1477

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT. BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

Peggy Warrick/PEGGY



ACORD 25 (2001/08) FAX: (615)848-3206

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED - OWNERS, LESSEES OR CONTRACTORS -  
AUTOMATIC STATUS WHEN REQUIRED IN CONSTRUCTION  
AGREEMENT WITH YOU**

This endorsement modifies insurance provided under the following:

**COMMERCIAL GENERAL LIABILITY COVERAGE PART**

A. **Section II - Who is an Insured** is amended to include as an insured any person or organization for whom you are performing operations when you and such person or organization have agreed in writing in a contract or agreement that such person or organization be added as an additional insured on your policy. Such person or organization is an insured but only with respect to your negligent actions which cause liability to be imposed on such person or organization without fault on the part of said person or organization, caused by your ongoing operations performed for that insured. A person's or organization's status as an insured under this endorsement ends when your operations for that insured are completed.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

**2. Exclusions**

This insurance does not apply to:

- a. "Bodily injury", "property damage" or "personal and advertising injury" arising out of the rendering of, or the failure to render, any professional architectural, engineering or surveying services, including:
  - (1) The preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; and
  - (2) Supervisory, inspection, architectural or engineering activities.
- b. "Bodily injury" or "property damage" occurring after:
  - (1) All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the site of the covered operations has been completed: or
  - (2) That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project

# SECTION 2 DEVELOPMENT PLAN PROCESSING AND PROCEDURES

## **2.1 Development Master Plans**

Development Master Plans must be prepared by a civil engineering consultant licensed in the State of Tennessee to design detailed water and sewer plans. NOTE: The consulting Engineer for CUD designs water lines for projects in CUD's territory.

Development Master Plans submitted to the Planning Department for Annexation or Planned Unit Developments do not constitute acceptable master plans to the Murfreesboro Water & Sewer Department unless they are comprised of the specific items detailed in sections 2.1.1 and 2.1.2. **Approval by the Planning Commission does not convey the right of the development to be served by water or sewer facilities provided by MWSD.** If sanitary sewer, potable or repurified water are expected by any planned development, MWSD approval should be secured via a "Will Serve" letter.

### **2.1.1 Development Sewer Master Plan**

Two (2) sets of development sewer master plans for the proposed development shall be submitted to the Department accompanied by a written inquiry for request to be served by MWSD. The master plan will be reviewed by the Department, taking into consideration the items defined in Section 1.3, including but not limited to:

- A. Existing trunk sewer location, size and capacity.
- B. Slope and size of proposed collection system and number of lots to be served.
- C. Department's 201 Wastewater Facilities Plan ("Plan") or any approved Sub-basin Area Master Plan ("SAMP").
- D. Department's design criteria (Section 4).
- E. Offsite Easements

Correction comments will be indicated on the development sewer master plan and returned to the developer's engineer.

In the event that the Department is willing to serve the planned development, a list of comments will accompany the "Will Serve" letter as well as probable mark-ups to the development master plan.

### **2.1.2 Development Water Master Plan**

Two (2) sets of development water master plans for the proposed development shall be submitted to the Department for review accompanied by a written inquiry for request to be served by MWSD. The master plan will be reviewed by the Department, taking into account the following:

- A. Existing water transmission main location and sizes.
- B. The proposed points of connection and distribution system shown.
- C. The estimated water demands calculated by the developer's engineer.
- D. City's fire flow requirements.
- E. Department's domestic water master plan.

- F. Department's design criteria for domestic water systems (Section 3). Correction comments will be indicated on the development water master plan and returned to the developer's engineer.
- G. If the project is within the boundaries of Consolidated Utility District, hereinafter "CUD", the Developer is responsible for coordination of water line design and installation with CUD. The Developer is responsible for submitting to this Department, acceptable plans, hydraulic calculations, a materials quantities list, and an engineer's estimate of construction costs. CUD water designs must show the relationship between the water line and the proposed sanitary sewer. The water line design and installation must meet the minimum design criteria and specifications of the Department or that of CUD, whichever is greater. **Being in CUD's water service area does not eliminate the need to meet the Murfreesboro Fire Department fire-flow requirements.**

### **2.1.3 Development Repurified Water Master Plan**

Two (2) sets of development repurified water master plans for the proposed development shall be submitted to the Department for review accompanied by a written inquiry requesting to be served by MWSD. (see Section 6 for design criteria).

### **2.1.4 Fire Department Coordination for Non-single Family Developments**

The developer's engineer shall obtain necessary fire flows from the City of Murfreesboro Fire Department for fire hydrant spacing and the proposed water main sizing for the fire flows for the tentative water master plan. After the first utility improvement construction drawing plan review by the Department, the developer's engineer must have satisfied the City of Murfreesboro Fire Department requirements before submitting them for a second plan review. Upon approval of the development master plans for sewer and water, one redlined copy will be returned to the developer's engineer showing the Department's comments and corrections.

Note that sprinkler systems are to be approved by the Murfreesboro Building & Codes Department.

### **2.1.5 Offsite Easement Agreements**

**Construction drawings for the Department facilities will not be accepted for review until all required offsite easements agreements have been executed via the Department's standard offsite easement agreement (Figure 2.) dedicating the easement to the City.**

Staff may allow a preliminary meetings to review construction drawings prior to easement agreement execution with the understanding that no formal comments will be provided nor should any approvals be implied by allowing such a meeting to occur.

After the off-site easements are acquired, the plans review process can begin and design comments will be sent to the engineer if necessary. Please note that final plans will not be approved by the Department until all off-site easements are dedicated to the City of Murfreesboro along with any necessary re-conveyances or subordination agreements. See Section 2.2.2 for onsite easement dedication procedures.

## **2.2 Development Construction Drawings**

### **2.2.1 Construction Drawing Approval Authority**

The Murfreesboro Water & Sewer Department has been granted construction approval authority from the Tennessee Department of Environment and Conservation (TDEC). All approvals granted by MWSD shall be in accordance with the Tennessee Department of Environment & Conservation and with the Murfreesboro Water & Sewer Standard Specifications (latest edition).

Approvals expire one (1) year from the date indicated on the plans, unless construction is either underway or complete, otherwise an extension must be requested. Significant deviations, such as route changes or depth changes, from the approved plans must be re-submitted and re-approved in writing before such changes are made. Minor changes made during construction need not have written approval. It is advisable to call MWSD where the significance is uncertain. One set of these plans, with the “Approved for Construction” stamp, must be kept at the construction site.

Approval of construction documents by MWSD should not be construed as a permit for any activity related to the project. Activities which may require a permit under the Water Quality Control Act and Regulations include, but are not limited to, the following: stream bank vegetation removal; creek crossing(s) for equipment or utility lines; construction within twenty (20) feet of a stream bank; or construction in or near a marshy area or wetland.

The Natural Resources Section of the Division of Water Pollution Control (615/532-0625) should be contacted for determinations regarding an NPDES permit or an Aquatic Resource Alteration Permit (ARAP) for those activities, which may result in degradation of waters of the state.

### **2.2.2 Onsite Easements**

Proposed easements must be shown on the construction plans, without exception. If an easement to the City is required for construction and/or maintenance of water, sewer, or repurified water facilities, the minimum easement width shall be twenty feet (20’) for domestic and repurified water facilities and thirty feet (30’) for sanitary sewers. Deep sewers (> 15 feet) or water lines (> 10 feet) will generally require wider easements. Easements shall extend ten feet (10’) beyond all fire hydrants.

Ten foot (10’) wide utility easements shall be provided parallel to all public streets right-of-ways in single-family developments.

Easements shall not go between lot lines unless absolutely necessary. In the case of parallel facilities the easement width shall not overlap. Any variance to the easement width would be at the discretion of the Director.

Easements for facilities which will be transferred to the City, whether off-site or on-site, must be dedicated either by plat prepared by the engineer/surveyor or by a legal document prepared by the City Legal Department. On-site easements must be dedicated

prior to acceptance of the project for the warranty period. Once the final design of the facility is determined, two (2) copies of the easement legal descriptions with accompanying exhibit or a plat shall be prepared by the developer's engineer/surveyor and submitted to the Department for review.

Easements which will be transferred to the City by plat, shown on the tract or parcel map must have the correct easement widths as specified above and the correct certification block, for Department acceptance and signatures. Once the plat is recorded, the Developer is required to provide a recorded copy to the Department.

For easements which will be transferred to the City by legal document, the engineer/surveyor must submit the legal description and exhibit to the Department electronically. If these are in an acceptable form, these will be forwarded to the City Legal Department to prepare. Once the Legal Department has prepared the easement it will be forwarded to the Developer for execution from the appropriate parties.

### **2.2.3 First Plan Review Submittal Requirement**

The developer/engineer shall submit the following items for first review of any residential, commercial, or industrial development:

- A. Two (2) sets of utility construction drawings with roads and sidewalks illustrated, as well as grading and storm drainage; standard D or E size sheet with MWSD's approval stamp for signature.
- B. One (1) copy of development master plan showing gross acreage, street names, and any offsite easement agreements, either proposed or existing.
- C. Engineer's quantity and cost estimates for water, sewer, and repurified water facilities.
- D. After first plan check, the Department will return one (1) red-lined set of the utility construction drawings and the red-lined tract/parcel map to the developer's engineer for corrections.
- E. Executed Development Agreement
- F. Hydraulic Calculations
- G. Review Fees – See Fee Schedules as Attachments to Figure 7.
- H. For Non-single family developments – one (1) set of plumbing plans.
- I. For developments utilizing MWSD's repurified water system; a repurified water service application, including one (1) set of landscaping and irrigation plans.

### **2.2.4 Second Plan Check Submittal Requirements**

The developer/engineer shall submit the following items for second check of any residential, commercial, or industrial subdivision:

- A. Two (2) sets of revised utility construction drawings.
- B. One (1) copy of the check print returned from the first plan review. When the plans are substantially complete, with only minor revisions remaining, the Department may elect to compute the required sewer and water connection fees and any other inspection and engineering fees based on the Developer's Contract and Murfreesboro City Code. One (1) red-lined set of plan check comments will be returned to the developer's engineer for corrections upon completion of any plan check. The status of plans currently in for plan check can be obtained by checking MWSD's website. The Department will make a reasonable effort to meet a standard of fifteen (15) working days for the first plan check, ten (10) working days for the second plan check, and five

(5) working days for each subsequent submittal. However the Department does not guarantee, that these deadlines will be met. The feasibility of meeting these deadlines will vary on a case by case basis. The extent of the corrections required on a plan set, and the current workload of the Department, may affect the previously stated time frames.

### **2.2.5 Construction Drawing Approval**

Construction Drawings must be prepared by a civil engineering consultant licensed in the State of Tennessee to design detailed water and sewer plans. NOTE: The consulting Engineer for CUD designs water lines for projects in CUD's territory.

Utility construction drawings must be approved by the Engineering Department before any construction can start. Construction drawings will not be approved until all off-site utility easement agreement have been provided to MWSD. Approval by the Engineering Department will be contingent upon satisfying the following requirements:

- A. All required corrections have been made on the utility construction drawings, and all systems are in conformance with the Department's Standard Technical Specifications & Drawings, latest edition.
- B. The water, sewer, and repurified water Development Contract (Figure 7), has been executed by the developer and returned to the Department.
- C. Fire flows have been determined by the Murfreesboro Fire Department and supporting hydraulic calculations prove that these flows can be met.
- D. The plans have been approved by Consolidated Utility District (if applicable).
- E. All required easement legal instruments have been executed and delivered to the Department.
- F. All required fees and charges have been paid by the developer.
- G. All digital submission requirements have been met per section 2.3.4. of this manual.
- H. Providing surety for areas identified by MWSD's Engineering Department as critical construction items, including but not limited to:
  - a. Stream crossings
  - b. Highway crossings
  - c. Erosion Prevention and Sediment Control on sites identified as Priority Construction Sites as defined within City Code Chapter 27 ½.
  - d. Offsite construction and offsite property restoration, including but not limited to facilities within public road right-of-way.

When the plans have been approved, the developer's engineer will be notified, and will provide the Department with six (6) fully approved sets of the utility construction drawings with the Department's approval stamp affixed to the plans associated with water, sewer or repurified water utility construction. The approved plans shall constitute a "permit" to construct water, sewer, and/or repurified water facilities as defined in Section 2.2.1. **Approved Plans shall not constitute a Notice to Proceed (NTP) for Construction.** See Section 2.5.1. for requirements prior to issuance of a NTP.

## **2.2.6 Certified Cost Affidavits**

Upon the satisfactory completion of construction and acceptance by the Department, the facilities shall be conveyed to the Department. The conveyance shall be accompanied by a Construction Cost Affidavit reporting the actual cost of construction supplied by the developer. The form shall be supplied by the Department. Completed forms should be submitted to the Department within thirty (30) days of the completion of the final inspection and prior to the release of the final plat. Upon receipt of this item, the Department will approve the reduction of the bonds posted for construction of the sewer, water, and repurified water facilities to 10% for the contracted warranty period.

## **2.3 Construction Drawing Requirements**

All plans submitted to the Department for plan checking and approval of water, sewer, or repurified water facilities will be submitted on 24" x 36" sheets. The plans shall also contain the information detailed in the following subsections. If all the items can be checked off as satisfied or N/A, the plan check corrections should be minor in nature.

### **2.3.1 Title, Notes and Standard Drawing Sheets**

Title sheets for utility construction drawings shall contain the following information as a minimum:

- A. Project identification, tract/parcel map number, project name, etc. For fire flow determination include the type of construction (apartments, condos, etc.), # of stories for proposed construction and the building materials to be used.
- B. Location map showing general area with the project area clearly indicated and described in words.
- C. Standard water, sewer, and repurified water notes as shown in this manual.
- D. Signature block for MWSD approval of sewer and water facilities in the form to be provided by the Department, See Figure 5. Indicate which facilities are included on construction drawings.
- E. Benchmark description and latest elevation. (NAVD88 Datum)
- F. Basis of bearings (NAD83 Datum)
- G. Name, address, phone number, and contact person of the engineering firm preparing the plans.
- H. Name, address, phone number, and contact person of the property owner or developer.
- I. Index of sheets.
- J. Quantity estimates and construction notes may appear on the title sheet. Construction notes for water, sewer, and repurified water shall not be mixed together and shall appear under separate headings. Different number series shall be used for each type of facility.
- K. TN 1-Call notification block (Figure 6).
- L. Street sections showing street widths to right-of-way and location of sidewalks.

### **2.3.2 Plan and Profile Sheets**

All plan and profile sheets shall include the following information:

- A. Scale. Horizontal scale shall be 1" = 50' and be clearly indicated. The vertical scale shall be 1" = 5' and be clearly indicated.
- B. North arrow.

- C. At least two (2) separate points of the utility system must be tied into the TN State Plane Coordinate System (NAD83).
- D. Plan and profile shall be on the same sheet for all sewer mainlines. Sewer lateral profiles may be required on larger non-single family unit developments.
- E. Existing water, sewer, repurified water and storm sewer facilities adjacent to the proposed development must be shown. Size and material of these facilities must be indicated.
- F. Proposed and existing easements to be dedicated to the Department for sewer, water, repurified water and storm sewer facilities must be shown on the plan.
- G. Proposed building or dwelling unit pad elevations must be shown.
- H. Storm drain alignment shall be indicated in the plan view and all crossings of water, sewer, or repurified water facilities and the storm drain shall be shown in the storm drain profile. Where water lines cross over the storm drains the top of the storm drain and the bottom of the water line must be shown, along with the proposed depth of cover.
- I. Provisions and requirements of Sections 3, 4, and 5 shall be adhered to in designing the various facilities.

### 2.3.3 Digital Submission Requirements

All engineers preparing construction drawings to submit to the Department for plan check purposes will be required to submit a digital graphics file containing the boundary information, street centerline, curb and gutter, right-of-way, lot/parcel line, easements, domestic water, sewer, and repurified water facilities included in the plan. The following table indicates which features are required to be transmitted digitally and those which are desirable but not required:

#### A. Construction Drawings

Street Centerline	Centerline	Required
	Street Name	Required
	Bearings/Distance/Curve Data	
	Annotation	Optional
Curb and Gutter	Curb and gutter line	Required
	Descriptive Data	Required
	Bearings/Distance/Curve Data	
	Annotation	Optional
Right-of-Way	Right of Way Lines	Required
	Descriptive Data	Required
	Bearings/Distance/Curve Data	
	Annotation	Optional
Lot/Parcel Data	Lot Lines	Required
	Lot Numbers	Required
	Lot Bearings/Distances	
	Annotation	Optional
Easement Data	Easement Lines	Required
	Descriptive Data	Required

	Bearings/Distances/Curve Data Annotation	Optional
Building/Structure Data	Building and/or Structural Footprints Descriptive Data Bearings/Distances/Curve Data Annotation	Required Required Optional
Domestic Water Data	Domestic Water Mains Domestic Water Laterals All Associated Facilities (i.e. Valves, Fire Hydrants, Meters, etc.) Descriptive Data Bearings/Distance/Curve Data Annotation	Required Required Required Required Optional
Sanitary Sewer Data	Sanitary Sewer Mains Sanitary Sewer Laterals Associated Facilities (i.e. Manholes, Cleanouts, Lift Stations, etc.) Descriptive Data Bearings/Distance/Invert Elevations Annotation	Required Required Required Required Optional
Repurified Water Data	Repurified Water Mains Repurified Water Associated Facilities (i.e. Valves, Meters, etc.) Descriptive Data Bearings/Distance/Curve Data Annotation	Required Required Required Required Optional
Storm Sewer Data	Storm Sewer Mains Associated Facilities (i.e. Manholes, Curb Inlets, Junction Boxes, etc.) Descriptive Data Bearings/Distance/Invert Elevations Annotation	Required Required Required Optional

Data Layering Requirements

The data will be layered as a minimum into the following features:

- Boundary Data
- Street Centerline
- Curb and Gutter Lines
- Right-of-Way Lines

Lot/Parcel Lines  
 Easement Lines  
 Building/Structure Footprints  
 Domestic Water Mains  
 Domestic Water Service laterals  
 Domestic Water Appurtenances (i.e., Valves, Fire Hydrants, Meters)\*  
 Sanitary Sewer Mains  
 Sanitary Sewer Laterals  
 Sanitary Sewer Appurtenances (i.e., Manholes, Cleanouts, Lift Stations)\*  
 Repurified Water Mains  
 Repurified Water Service Laterals  
 Repurified Water Appurtenances (i.e., Valves, Meters)\*  
 Storm Sewer Mains  
 Storm Sewer Appurtenances (i.e., Manholes, Curb Inlets, Junction Boxes)\*  
 \* Facility appurtenances shall be represented as single distinct symbols or blocks.

#### Data Accuracy and Coordinate System

The accuracy of data submitted in accordance with these specifications will be consistent with data converted directly from COGO and may be used for computational purposes during the plan check and construction phase of the submitted project. The coordinate system of data shall be the TN State Plane Coordinate System (NAD 83). File Formats and Media Requirements Digital files are acceptable in either an Autocad drawing file (DWG) format or a drawing exchange file (DXF) format. Digital files should be submitted on a Windows formatted CD.

#### Checking of Digital Data

The digital data will be checked for the following:

1. Correct layering
2. Verification that annotated and calculated data are consistent
3. Verification that digital and hard copy plans are consistent
4. Verification of correct coordinate system
5. Verification of a continuous pipeline shown in one drawing file. (Plan & profile digital files will not be accepted).
6. Verification that digital files do not contain unresolved line types, font files, and external references.

If the engineer does not have the capability to submit such files, the Department's staff shall create the graphics file and recover the cost through plan check fees. The cost shall be determined by calculating 2% of the total bondable costs calculated for water and sewer facilities.

## **2.4 Non-Single Family Application Requirements**

### **2.4.1 Domestic Water & Sewer Services**

All services for non-residential developments must be equipped with approved backflow prevention devices; a double detector check assembly for fire lines and a reduced pressure backflow device for non-single family domestic water service. Refer to section

- 3.3 and 3.4 for the Department's requirement for backflow devices. Items required to make application for non-residential domestic water and sewer service are,
- A. Two (2) sets of construction drawings with water and sewer service lateral location highlighted. Sewer service laterals may only be one hundred and fifty (150) feet per building in length max. If longer than 150', then public sewer (8' min. w/ 4' diam. manholes) must be extended (ref. 2.4.1.I & Section 5) Note: Non-single family construction drawings are provided to the Murfreesboro Water & Sewer Department after they are reviewed and approved by the City's Planning and Engineering Department and Building and Codes Department.
  - B. One (1) set of plumbing plans showing the number of fixtures units.
  - C. A letter from the developer or developer's agent requesting a (size) meter, not to exceed (quantity) gpm, to serve (company name) at (address) and payment for the cost of installation.
  - D. Domestic water service for irrigation requires a site plan and irrigation plan. A request for domestic water service for irrigation must be approved by the Engineering Department. **Where available, repurified water must be used for irrigation service.** (See Design Criteria, Repurified Water Facilities, Section 6).
  - E. If a restaurant or food service establishment, a fats, oils and grease ("FOG") application with grease interceptor calculations.
  - F. If a restaurant or food service establishment, then the seating capacity.
  - G. If an office space greater than 5,000 s.f., then a per square foot consumption estimate based on a similar usage facility.
  - H. If a commercial space greater than 35,000 s.f., then a per square foot consumption estimate based on a similar usage facility.
  - I. If public infrastructure extensions are required as part of the non-single family unit development plan, then the Developer shall be required to execute a Development Agreement with the Department and supply all associated contractor information, insurance, bonding and warranty items. (Ref. to Figure 1. & Section 1.4-1.6 on requirements associated with extending public infrastructure & Section 4 thru 6 on general design criteria for potable water, repurified water & sanitary sewer public infrastructure).

#### **2.4.2 Building Sewer Requirements on a Multiple Tenant Shell Building**

A twelve (12") inch drop through the first sanitary sewer building clean-out located within five (5) feet of the structure is required on each anticipated lease space on a multiple tenant shell building. This 12" drop is required to accommodate a future grease interceptor in the event that the lease space is ever utilized for a restaurant or food service usage. All multiple tenant shell buildings should anticipate enough space for a future grease trap within the rear of the building or at the exit of their grease waste plumbing. If no grease waste plumbing was accommodated in the initial build out of the shell building, then the tenant space shall either be retrofitted or no restaurant / food service business shall be allowed to reside in the relative space.

#### **2.4.3 Fire Service Requirements**

All fire service connections will be made through a double detector check valve assembly and the plan check submittal package shall include a site utility plan showing:

- A. Property lines and required easements.

- B. Building footprint.
- C. All on-site private fire hydrants.
- E. Address of the building.
- F. If the fire supply connection is less than 100 linear feet from the structure, then the double detector check valve can be housed inside an interior mechanical room within the structure. If the fire supply connection is greater than 100 linear feet from the structure, then the double detector check valve must be housed in an exterior “hot-box” structure adjacent to the point of connection for the fire supply.
- G. A private service for fire protection shall be subject to NFPA 24 and NFPA 291 requirements. No domestic service connections shall be made on mains intended to provide fire protection.

### **2.4.3 Public Fire Hydrant Requirements**

Application for installation of public fire hydrants shall include a site utility plan showing:

- A. Property lines and required easements.
- B. Building footprint.
- C. Location of public fire hydrant approved by the City of Murfreesboro Fire Department.
- D. The owner or developer will bear the responsibility and cost of installing the fire hydrant after the plans are approved by MWSD. If the Department elects to install a public fire hydrant on behalf of the owner or developer, then payment will be required prior to the installation of said hydrant.
- E. Fire-flow hydraulic calculations.
- F. If public infrastructure extensions are required as part of the installation of public fire hydrants, then the Developer shall be required to execute a Development Agreement with the Department and supply all associated payments, inspection fees, contractor information, insurance, and bonding items.

### **2.4.4 Repurified Water Service Requirements**

All Repurified water service requests shall conform to MWSD’s repurified water service application, including

- A. One (1) set of landscape irrigation system plans
- B. There must be an address assigned to each repurified water service.

If repurified water is currently available, or will be available as determined by the Engineering Department, it is a requirement to be used for landscape irrigation. The Engineering Department must approve any decision not to use available repurified water for landscape irrigation.

### **2.4.5 Additional Requirements, Standards and Fees for All Non-Single Family Applications**

- A. All non-single family service applications must be accompanied by the appropriate plans, payment of the installation costs and the signature of the applicant or his authorized agent.
- B. The Department will install all domestic water, repurified water, and bypass meters for non-single family services without exception.

- C. The submitted construction drawings must contain the following information and conform to the following criteria:
- (1) Standards size D or E sheet.
  - (2) The appropriate MWSD standard notes must appear on the plans.
  - (3) Signature block for MWSD approval must be provided in the form required by MWSD (See Figure 5).
- D. All taps and meters are supplied by Murfreesboro Water & Sewer Department Operations and Maintenance Division. Check with MWSD's Engineering Department for all applicable fees. The standard water taps and meter sizes supplied by MWSD O&M are:

Tap Size	Meter Size
1"	5/8"
1"	1"
2"	1 1/2"
2"	2"
>2"; tapping sleeve & valve	>2"; <b>special order meter*</b>

**\*Note: Any meter greater than 2" requires special ordering and may have substantial delivery times. Ordering and payment for these meters should be done as soon as possible to avoid delay in water service.**

- E. Lump sum fixed fees will be determined by the Department for each mainline water service installation (taps greater than 2") by MWSD personnel. These costs will be provided to the applicant so that the fees can be paid before installation.
- F. Digital submission of all construction drawings in accordance with Section 2.3.4 of this manual.
- G. If public infrastructure extensions are required as part of the non-single family development, then the Developer shall provide quantities and cost estimates of all mainline extensions and associated appurtenances. The Developer shall also be required to execute a Development Agreement with the Department and supply all associated contractor information, insurance, bonding and warranty items.

#### **2.4.6 Plan Approval Expiration Time Limit**

Plans will be valid for a period coincident with that of the City's Planning and Engineering Department or the City's Building and Codes Department, whichever expires most recent. In case of plan approval expiration, plans must be re-submitted and re-approved. **Re-approval of a project is not guaranteed simply because it has expired, as a project's initial approval does not confer any vested right to the developing party the use of any utility service provided by MWSD;** MWSD reserves the right to charge additional tap fees, plan review fees and/or connection fees, at its sole discretion. No modifications will be allowed to the development which increases the number of units or equivalents (i.e., demand or loading) to be served by the system without additional approval by the Department. A condition of re-approval of a project may require a decreased number of units or equivalents (i.e., demand and loading) to be served by MWSD's system.

## **2.5 Starting Work & Inspection of Public Infrastructure**

All work shall be subject to inspection by the Department and shall be left uncovered until approved by the Department Inspector. The contractor shall not proceed with any subsequent phase of work until the previous phase has been inspected and approved by the Department.

The inspector will attempt to see that materials and installation meet the Department's requirements; but will not be responsible for any measurement and payment items as this is strictly between the Developer and Contractor. The inspector will also collect any data necessary for the Department's records.

The inspectors employed by the City shall have full authority to reject any defective material or workmanship. Inspectors will **not be** authorized to revoke, alter, enlarge, or relax the provisions of the approved construction drawings or MWSD's standard specifications, or to issue any instructions contrary thereto. Inspection occurring on constructed facilities does not convey correctness or responsibility to the City as pertaining to any defective workmanship on the part of the Developer's contractor or any third party providing services to the Developer.

All water and sewer work must be installed in accordance with the Department's specifications and requirements. It is the Developer's responsibility to insure that the Contractor complies with these requirements. MWSD reserves the authority to require the owner or developer to dig-up any constructed utilities that were not inspected by an MWSD inspector.

### **2.5.1 Notice to Proceed for Start of Construction**

**The owner, developer or developer's engineer shall submit sanitary sewer cut sheets no less than five (5) working days prior to the desired date to start construction.** MWSD shall endeavor to have cut sheets reviewed within this time frame, but may require longer.

Prior to receiving a Notice to Proceed to Construction the Developer is required to provide the Department with the following information:

Contractor's License (must be MU classified)

Contractor's Insurance

Sanitary Sewer Cut Sheets with Site Graded to Subgrade.

- a. The sanitary sewer cut sheets form must be approved by MWSD.
- b. The sanitary sewer cut sheet stationing shall conform to the construction drawings profile stationing, or the cut sheets shall be rejected and not reviewed.**

Staking in place:

For Residential - Lot Corners & Offsets

For Non-single family - Service Locations & Offsets

After the Developer has selected a Contractor, and receipt of Notice to Proceed from City Engineering, the Department will issue the official Notice to Proceed with mainline construction of water and sewer to the Contractor. Any construction work prior to the

issuance of the Notice to Proceed will be at the Developer and Contractor's risk. Any utilities to be dedicated to MWSD constructed prior to the issuance of a Notice to Proceed will be required to be "dug-up" and re-laid – no exceptions.

No water and sewer construction may be performed without a Notice to Proceed and a schedule of days the work is to be performed so the Department can place an inspector on the job. There may be some cases such as when the Contractor is drilling rock that the inspector and Department supervisor may determine that the inspector's presence is not required.

Notice shall be given to the Department Inspector at least 48 hours before starting construction to set up a pre-construction activity meeting (see section 2.5.2). Approved plans with the Engineering Department's signed approval block (per section 2.3) must be presented to the inspector prior to issuance of the Notice to Proceed.

### **2.5.2 Pre-Construction Activity Meeting**

A pre-construction activity meeting must be held on-site before the start of construction. The contractor's job foreman and/or job superintendent and the Department Inspector must be present. The purpose of this meeting will be to answer any questions on Department specification requirements, to obtain the contractor's construction schedule and emergency phone numbers, and to discuss any circumstances which may affect job installation. All construction of utilities for any proposed development shall remain isolated from the existing infrastructure by whatever means deemed necessary by the Department. This shall include plugging off any gravity sewer mains and not connecting to any potable or repurified water system. Connection to existing public infrastructure shall only be allowed upon complete acceptance of the work.

### **2.5.3 Sewer Inspections**

Inspection shall be made at the intervals listed below:

- A. Trench excavation and bedding.
- B. Placing of pipe, fittings, and structures.
- C. Placing and compacting the pipe zone backfill.
- D. Backfill of the balance of the trench to grade per MWSD Technical Specifications.
- E. When manholes and mainline clean-outs are being raised to finish grade and the system is being air-tested and flushed. All sewer main lines 8" and larger are to be inspected by the Department using a closed circuit television system. A digital recording will be made of the inspection. (See Section 2.5.6 below for requirements.)
- F. Vacuum Testing of Manholes.

### **2.5.4 Water and/or Repurified Water System Inspections**

Inspection shall be made at the intervals listed below:

- A. Trench excavation and bedding.
- B. Placing pipe, fittings, and structures; including warning tape on repurified water main and service lines.
- C. Pouring all concrete anchors and kicker blocks.
- D. Placing and compacting the pipe zone backfill.
- E. Backfilling balance of trench to grade per MWSD Technical Specifications

- F. Pressure testing all mains and services.
- G. Re-paving trench cuts.
- H. Raising valve box covers to finish grade.

**Note: Installation of service lines to the meter from the main water line, meter boxes, and water meters shall be installed by MWSD's Operation and Maintenance Dept.**

### **2.5.5 Construction Site Runoff / Erosion and Sediment Control Inspections**

A pre-construction activity inspection shall occur on the development site prior to construction activity. Figure 9. identifies those items being checked at the pre-construction activity inspection.

Construction Activity Inspections shall occur once a month on each development site. Figure 9. identifies those items being checked during the monthly construction activity inspection.

### **2.5.6 MWSD Sewer Line Closed-Circuit Television Inspection**

**After the completion** of the construction of municipal main sanitary sewer lines (8" and larger) **and again** prior to the end of the 36 month warranty period, these sewers will be inspected or caused to be inspected by the Department using a closed-circuit television system. Any deficiencies or violation of these specifications found during the initial TV inspection or during the TV inspections prior to the completion of the warranty period shall be corrected immediately by the developer and/or contractor, at the direction of the Department Engineer, at the sole expense of the developer and/or contractor. The fee schedule for the Department TV inspection will be as published on the Department's web site.

- A. The following work must be completed prior to the initial television inspection:
  - (1) All sewer pipelines and municipal service laterals are installed and back-filled.
  - (2) All structures are in place, all channeling is complete and pipelines are accessible from structures.
  - (3) All other underground facilities, utility piping and conduits are installed and their trenches compacted.
  - (4) Pipelines to be inspected have been flushed.
  - (5) Final air test has been completed and PVC lines have been mandrelled.
  - (6) Final vacuum testing of all manholes.
- B. When the above work is complete, the developer and/or contractor shall request the Department Inspector to establish a date for TV inspection. It will be the goal of the Department to inspect or cause the pipes to be inspected within 30 days of the request and for the inspection to be reviewed within 15 days of the inspection being completed. During this inspection, the contractor or their authorized representative must be present. A digital video of the TV inspection will be produced and kept on file by the Department.
- C. TV Procedure - All TV inspection shall be conducted according to current NASSCO PACP standards.
- D. Inspection Standards

The following shall be considered defects in construction of the sewer pipelines and will require correction prior to final acceptance:

- (1) Off grade - 0.12 foot (1 ½ inches), or greater, deviation from grade.
- (2) Stagnant flow
- (3) Vertical or horizontal joint misalignment or separation including poorly belled joints
- (4) Dropped joints.
- (5) Roots at joints, tap connections or MH/pipe connections
- (6) Improperly sealed MH/pipe connections or connections where the pipe and manhole inverts do not match.
- (7) Cracked, broken or otherwise damaged pipe
- (8) Evidence of presence of an external object bearing upon the pipe.
- (9) Evidence that the pipe has been struck by an external object and possibly damaged.
- (10) Egg-shaped or otherwise deformed pipe with greater than 5% deformation.
- (11) Infiltration or evidence of infiltration .
- (12) Debris or other foreign objects in the line.
- (13) Service laterals that are sloped less than 1% or are not constructed with specified wye.
- (14) Improperly lined ductile iron pipe or pipe with a damaged section of liner
- (15) Other obvious deficiencies that may result in infiltration, loss of capacity or any discrepancies from MWSD specifications

The developer/contractor shall be notified in writing of any deficiencies revealed by the TV inspection requiring repair, following which the developer/contractor shall make the necessary repairs.

#### E. Re-inspection

- (1) The contractor and developer will be notified in writing to repair noted deficiencies.
- (2) All breaking, cutting, and corrective work, including moving, removing, etc. of pipe, shall be done in the presence of the Department Inspector.
- (3) Those portions of the pipeline that have been corrected must be re-inspected by means of closed circuit television. This inspection will be the responsibility of the developer and must be to current NASSCO PACP standards. A digital video will be delivered to the Department after completion of the inspection.
- (4) It will be the goal of the Department to review the re-inspection with the developer/contractor within 5 working days of receiving the video.
- (5) The procedure for re-inspection of defective work will be repeated until all deficiencies observed by television inspection have been corrected to the complete satisfaction of the Department.

### **2.5.7 Department Authority**

The Department shall have access to the work at all times during construction and shall be furnished with every reasonable facility for ascertaining full knowledge of the progress, workmanship, and character of materials used and employed in the work. No pipe, fittings, or other materials shall be installed or backfilled until inspected and approved by the Department Inspector. The contractor shall give due notice in advance of backfilling to the Department Inspector so that proper inspection may be provided. Inspection of the work shall not relieve the contractor of any obligations to complete the

work as prescribed by the standard specifications. Any known defective work shall be corrected before testing or final inspection will be permitted. Unsuitable materials may be rejected even if these materials have been previously overlooked by the Department Inspector. The Department Inspector shall have the authority to suspend the work completely or in part for such time as it may deem necessary if the contractor fails to carry out instructions given by the Department Inspector, or to perform any required provisions of the plans and specifications. The contractor shall immediately comply with a written order of the Department Inspector to suspend the work completely or in part. The work shall be resumed when improper methods or defective work are corrected as ordered and approved in writing by the Department Inspector.

### **2.5.8 Sewer Mains in Service Before Completion of Street Paving**

The Department Inspector will require the contractor to test all sewer mains before the Department's final acceptance which would allow the sewer to be put them into service.

A final flushing is required prior to acceptance. The Contractor shall plug the manhole at the downstream terminus of the project; where the public system begins. The flushing of the new sewer mains shall be performed in a manner approved by the Department Inspector.

At the downstream manhole where the project joins the public system and is plugged, the Contractor shall pump and dispose of all debris and foreign material that was collected in the plugged manhole.

After the manhole has been pumped and no more debris is evidenced, the plug shall be removed and the project shall be accepted.

### **2.5.9 Final Sewer Inspection**

All sewer mains installed by the developer shall have passed the Department's TV inspection (see Section 2.5.5). Before final acceptance, the Department Inspector reserves the option of requiring that the contractor flush and mandrell the sewer mains again even though the sewers may have been previously flushed and mandrelled. The Department Inspector will require the contractor's superintendent or foreman to be present during final inspection of new sewer mains. The Department Inspector may check, but is not necessarily limited to:

- A. Mirroring of sewer mains shows all bulkheads and plugs have been removed.
- B. Concrete base and channels in manholes are smooth.
- C. Manhole interiors are clean of all debris and excess concrete mortar.
- D. All manhole concrete grade rings are adequately grouted and properly set.
- E. Pavement around manhole cover has been properly joined at correct grades.
- F. Required field tests have been made on all sewer main sections and manholes, particularly when sections of manholes had to be repaired.
- G. Backfill was performed according to specifications.
- H. Lateral locations have been marked on curbs.
- I. Mainline clean-outs are raised to grade, exterior commercial clean-outs have the correct cast iron box and frame installed where called for, and marked according to Department standards.
- J. Restoration of off-site disturbed properties to pre-construction conditions.

K. For non-single family developments, the Contractor must call MWSD Engineering to request final inspection of the water meter box and exterior sewer cleanout cast iron boxes and frames, and grease interceptors (if applicable) after yard work is completed. Cleanout boxes and meter boxes must be at finished grade before requesting a final inspection. A Certificate of Occupancy will be requested to be placed on hold if the meter and sewer clean-out boxes are deemed unacceptable. MWSD Engineering will not make independent inspections of water and sewer facilities. Both water and sewer lines will be inspected at the same time.

### **2.5.10 Potable Water & Repurified Water in Service Prior to Acceptance**

The Department Inspector may approve putting newly installed potable water and repurified water into service after compaction has been approved and the portions have been pressure tested, chlorinated, flushed, and potable water mains have passed the bacteriological test. This partial acceptance shall be granted only upon written request from the developer and subsequent approval by the Department Inspector. Upon this written approval for partial acceptance of facilities, the developer shall be relieved of the duty to maintain the portions so used or placed into operation provided, however, that nothing in this section shall be construed as relieving the developer of full responsibility for completing the work in its entirety, for making good any defective work and materials, for protecting the work from damage, and for being responsible for damage and for work as set forth in the agreement and other contractual documents; nor shall such action by the Department be deemed completion and acceptance, and such action shall not relieve the Developer of the guarantee provisions of the Developer's Agreement with the Department.

### **2.5.11 Final Water and Repurified Water Facilities Inspection**

Before final acceptance, the Department Inspector will make a final inspection of all work, accompanied by the contractor's superintendent or foreman, to verify that:

- A. All phases of the job are complete in accordance with plans and specifications.
- B. Valve boxes are raised to finish grade and aligned appropriately with the main and that all repairs are complete.
- C. Valve covers are aligned appropriately in the direction of the main.
- D. Right-angle meter stops, meters, and customer service valves are properly positioned and all meter boxes are positioned and raised to proper grade and meters installed.
- E. Fire hydrants are raised to proper grade, are in a vertical position, painted, and concrete pads are poured.
- F. Backfill has passed all compaction testing.
- G. System valves are turned and left open (except those specifically required to be normally closed), turns required for complete open/close cycle are recorded on the record drawings.
- H. Domestic water lines have been chlorinated, flushed and passed the bacteriological testing. Note that bacteriological testing requires two (2) samples with a 24-hour separation between samples. The second sample takes 24 hours to identify a passing or failing result. Therefore, the Contractor should expect a **minimum of forty-eight (48) hours** after the first bacteriological test before the water main can be put into service.
- I. Line pressure testing and flushing have been completed.

- J. The job site is clean and cleared of all the contractor's equipment and materials.
- K. Service lateral locations have been marked on curbs.
- L. Restoration of off-site disturbed properties to pre-construction conditions.
- M. For non-single family developments, Contractor must call MWSD Engineering to request final inspection of the water meter box and exterior sewer cleanout cast iron boxes and frames, and grease interceptors (if applicable) after yard work is completed. Cleanout boxes and meter boxes must be at finished grade before requesting a final inspection. A Certificate of Occupancy will be requested to be placed on hold if the meter and sewer clean-out boxes are deemed unacceptable. MWSD Engineering will not make independent inspections of water and sewer facilities. Both water and sewer lines will be inspected at the same time.

### **2.5.12 Interpretation of Specifications and Detail Drawings**

Figured dimensions of the drawings shall govern, but work not dimensioned shall be as directed. Work not particularly shown or specified shall be the same as similar parts that are shown or specified or as directed. Full size details shall take precedence over scale drawings as to shape and details of construction. Specifications shall govern as to material. Scale drawings, full-size details, and specifications are intended to be fully cooperative and to agree; but should any discrepancy or apparent difference occur between plans and specifications, or should errors occur in projects being constructed by others affecting the work, and the contractor proceeds with the work affected without instruction from the Department, he shall be fully responsible for any resultant damage or defect.

### **2.5.13 Release Given for Water/Sewer Taps and Building Permits**

After final inspection requirements have been fulfilled, along with the requirements outlined in Sub-section 2.2.5, the Department will provide notification of its final acceptance to facilitate the release of the developer's bonds for water, sewer, and repurified water facilities. **A 10% bond will be held throughout the three (3) year warranty period.**

- A. Water, Sewer and Repurified Water taps will be made by MWSD Operations and Maintenance Department. Taps will not be made until all linework has been tested and approved by MWSD's Inspector and the appropriate fees paid. In certain instances repurified water main taps will be made by the developer.
- B. Building permits will be held until such time as all Erosion Prevention and Sediment Control devices are deemed acceptable and all off-site disturbance (if applicable) have been restored to the satisfaction of the respective property owners. All final punch list items will need to be completed prior to the Department approving release of Building Permits.
- C. In the event that during the building of homes in residential developments, additional punch list items are identified or erosion prevention and sediment control devices are not deemed acceptable, the developer will be responsible for immediate remedy of identified issues or the Department will recommend to the Building and Codes Department to cease issuance of Certificates of Occupancy in said development.
- D. The 10% letter of credit, bond or cashiers check will be released at the end of the three (3) year warranty period.

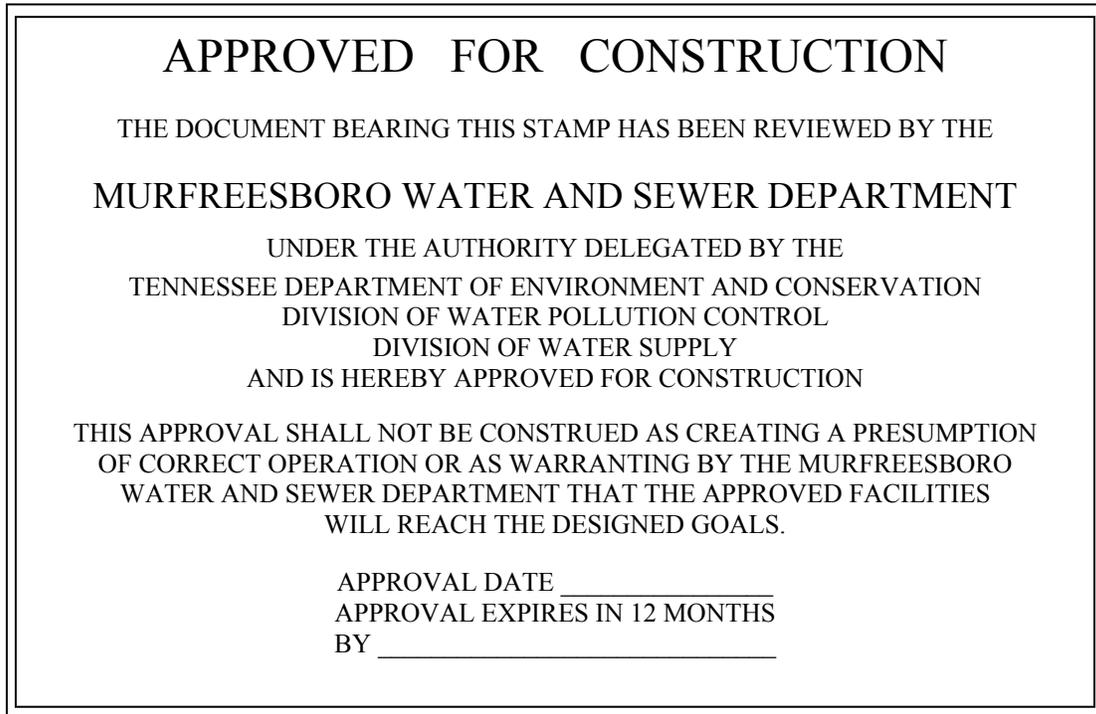
### **2.5.14 Sanitary Sewer Line Connections by Operations and Maintenance**

- A. On single-family units, Operations and Maintenance inspects the sewer line from the house to the sewer lateral and either approves or fails the house service sewer.
- B. If sewer service is approved, a cleanout will be installed at the right-of-way at the time of inspection.
- C. Contractor must call Operations and Maintenance to request a sewer cleanout box after backfilling around the cleanout.
- D. On non-single family units, the Building and Codes Department inspects the sewer line from the building to the lateral and either approves or fails the building service sewer. Exterior clean-outs on non-single family developments shall be housed in cast iron covers and frames and constructed per MWSD's standard detail included as Exhibit 10. If upon final inspection by MWSD these clean-outs are installed incorrectly, the Department will place a hold on the Certificate of Occupancy for the building.

### **2.5.15 Holds on Certificates of Occupancy**

Upon approval of final inspection of the water meter boxes and the sewer cleanout boxes, MWSD Engineering will notify the Building and Codes Department that Certificate of Occupancy can be issued. If water meter boxes and sewer clean-out boxes are not satisfactory, the Department will request a "hold" be placed on the Certificate of Occupancy.

**Figure 5.**



**Figure 6.**

**Tennessee  
One-Call**



**1-800-351-1111**

**Make sure you call at least three days  
before and have the following  
information ready:**

- Name of Caller
- Telephone Number
- Best Time to Call
- County
- Town
- Street Address
- Start Date & Start Time
- Type of Work
- Blasting?
- Work Being Done by:
- Work Being Done for:



**FIGURE 7.**

**CONTRACT**

THIS CONTRACT AND AGREEMENT, made and entered into on this the \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by and between THE CITY OF MURFREESBORO, Tennessee, a municipal Corporation, located in Rutherford County, Tennessee, hereinafter referred to as "CITY", and \_\_\_\_\_, with its principle place of business at \_\_\_\_\_, City of \_\_\_\_\_, State of \_\_\_\_\_, hereinafter referred to as "DEVELOPER".

WITNESSETH:

FOR AND IN CONSIDERATION of the mutual benefits accruing to each party hereinafter set forth, and ONE DOLLAR (\$1.00) cash in hand paid, the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows:

1. Upon request of Developer, the Murfreesboro Water and Sewer Department, hereinafter "Department", will consider plans for the installation of mainline water and/or sanitary sewer to serve \_\_\_\_\_, hereinafter "Development".

2. The Developer will be responsible for the hiring of a qualified civil engineering consultant licensed in the State of Tennessee for the purpose of designing the potable water, repurified water and sanitary sewer mainlines. Plans and specifications conforming to local codes, and the latest editions of the Murfreesboro Water & Sewer Department Design Criteria and Standards, State of Tennessee Community Public Water Systems Design Criteria and Design Criteria for Sewage Works shall be prepared by the Developer's consultants. The scope of work shall include the design of said

improvements. Design shall include engineering reports, preliminary surveys, water and/or sewer line plans, sewer line profiles, detail sheets, project specifications, hydraulic calculations and preparation of cost estimates. The Developer shall coordinate all water and/or sewer design with the Department Engineer, and submit the design for review and approval to the Department Engineer allowing at least two weeks review time for approval. All permits from other governmental agencies and utilities are the responsibility of the Developer.

Cost Estimates based on completed water and/or sewer plans and any Department cost shall be used to establish the construction cost portion of the letter of credit, bond, certificate of deposit or cash required by Department Policy and Procedures.

The Department reserves the right to designate, for the purpose of dedication to the City, water and/or sewer lines as public for operation and maintenance by the Department. In the event that the project is within the boundaries of Consolidated Utility District, hereinafter "CUD", the Developer shall coordinate all water line design and installation with CUD. If the project is within the limits of CUD, the Developer must submit to this Department acceptable water line designs on an approved scale, with State of Tennessee approvals, prior to this Department approving any sewer line designs.

The obtaining of bids and award of contract will be the responsibility of the Developer.

The Developer's engineering consultant shall provide survey layout of the water and/or sewer lines which includes the field location of an appropriate benchmark(s), location of sewer manholes, preparation of sewer line cut sheets and water line location alignments. The Department must approve the layout, cut sheets and line locations before construction begins.

Resident inspection shall be provided by this Department for both water and

sewer to ensure compliance with the final plans and specifications and the verification of the quantity of materials installed. Compensation for resident inspection shall be based on actual footage of water and/or sewer lines installed at a unit charge as established in Exhibit "A". Preparation, verification, approval and payment of periodic payment requests by the Contractor shall be the sole responsibility of the Developer or representative.

The Developer shall provide the Department detailed site plans, road plans and profiles, storm drains and other utilities including water and sewer. The Developer shall inform the Department of any changes to the plans after submittal for water and sewer design, and any field changes which would affect the design.

There may be a need for the preparation of easement descriptions for water and/or sewer lines. This will be accomplished by the Developer providing the Department with legal descriptions for easement documents or providing the Department appropriate easement via the plat.

The final easement documents shall be prepared by the City Attorney with easement descriptions provided by the Developer or prepared descriptions by the Department at the request and expense of the Developer.

3. The City will charge the Developer for the review of construction plans and inspection in accordance with the fee schedule attached hereto as Exhibit "A" and incorporated herein. The City will charge the Developer for the installation of the water service lines installed by the City in accordance with standard charges for similar work customarily charged Developers.

4. All connections of the new construction with existing water and sanitary sewer lines may be performed by the City at the option of the City.

5. The Developer shall be responsible for construction of water and sanitary

sewer lines in conformity with plans and specifications submitted to and approved by the City. The City will not accept or connect water and sewer lines which do not meet all requirements.

6. In order to secure the performance of the Developer's obligation under this agreement and the ordinances, codes, Standard Water and Sewer Specifications, and other regulations of the City, the Developer and the Department agree:

a) That the total estimated cost of construction is \$\_\_\_\_\_, which represents the total estimated costs of constructions for required water and/or sewer improvements on said development. If the Developer wishes the final plat executed prior to the completion of the water and/or sewer improvements for said development, security in the form of an irrevocable letter of credit, certificate of deposit issued by a Tennessee financial institution described in T.C.A. 12-4-108 (i), cash deposit, or performance and payment bond issued by an insurance company licensed in Tennessee shall be provided to the City. The amount of the security to be provided by the Developer shall be determined as a percentage of the water and sewer lines remaining to be completed in accordance with the inspector's project quantity records. The security shall remain in force through the completion of the work and shall extend for a period of thirty-six (36) months after the completion of the work, except that the City may release a portion of the letter of credit, certificate of deposit, cash deposit, or performance and payment bond during the thirty-six (36) month maintenance warranty period which shall commence at the time the City gives written acceptance of the improvements as being complete according to the plans and in conformity with the ordinance, codes, Standard Water and Sewer Specifications, and other regulations of the City; provided however, that the security retained for such warranty period shall in no event be less than ten percent (10%) of the total cost of

construction of the proposed improvements for the development, or a minimum of \$3,000.00. The Director of the Department is authorized to reduce the amount of the Letter of Credit below the aforementioned minimum in his/her sole discretion on items of little value.

b) That the total estimated cost of critical construction is \$\_\_\_\_\_, which represents the total estimated costs of critical construction for required water and/or sewer improvements for said development. Critical construction items include but are not limited to, highway, railway or stream utility crossings, highway, railway or streamside utility parallelisms, offsite utility improvements through properties not owned by the Developer or through publicly owned right-of-way, offsite and onsite erosion prevention and sediment control best management practices, offsite and onsite property restoration to the pre-existing condition prior to any construction or disturbing activities. The aforementioned amount shall be fully secured in the form of an irrevocable letter of credit, certificate of deposit issued by a Tennessee financial institution described in T.C.A. 12-4-108 (i), cash deposit, or performance and payment bond issued by an insurance company licensed in Tennessee and shall be provided to the City prior to the Department issuing a Notice to Proceed to start utility construction on Development.

7. The Developer agrees to be responsible for maintenance and upkeep of all public improvements and water and sewer lines constructed for a period of thirty-six (36) months following the date of written acceptance by the City Engineer, said maintenance and warranty to include all public improvements, but not be limited to, adjustment of manhole frames and covers, fire hydrants, and valve boxes. In the event of a problem requiring correction during the warranty period, or any extension thereof, the Developer's warranty period for the correction may be extended for an additional three (3) years from

the time the City gives written acceptance of the repairs.

8. The Developer shall make or cause to be made, any repairs or replacements made necessary by the settlement within thirty (30) days after receipt of written notice of the City. Repairs and/or replacement shall meet the most current version of the technical specifications for street repairs due to settlement over utility lines.

9. The City shall require prepayment of estimated costs for labor and materials performed by the City.

10. The Developer understands that charges and expenses set forth herein do not include charges for permits and fees required by City.

11. The Developer agrees to provide liability insurance or require the Contractor to provide liability insurance in the minimum amount of \$1,000,000 single limits, which names the Developer, City and Contractor as insureds. In addition, the Developer agrees to hold the City harmless and indemnify the City for all claims of loss associated with construction by the Developer. The insurance policy shall require a minimum of thirty (30) days written notice to the City prior to cancellation.

The Developer shall deliver proof of insurance prior to any construction. In the event the Developer fails to do so, the City may, following fifteen (15) days prior written notice to Developer, purchase the necessary insurance and charge same to the Developer together with an interest rate/service charge fee of 20% per annum.

12. In the event of default by Developer, Developer agrees to pay reasonable attorney's fees and court costs associated with enforcement of this agreement.

13. Upon completion of construction and prior to acceptance, the Developer will submit a sworn statement of actual costs of labor and materials required for construction excluding sums previously billed through the Department. The City will supply the Developer with a form for this purpose.

14. In the event any construction is to be performed within existing public right-of-way of the City, Developer agrees to notify the Department prior to the commencement of said work in the public right-of-way, and to obtain all necessary approvals and permits from all City departments.

Developer further agrees to properly mark the construction area with barriers, barricades, fences, guards and flagmen as required by the Manual on Uniform Traffic Control Devices, Part 6 (“MUTCD”), in order to minimize the danger to the public. Developer agrees that in streets which are not barricaded to block all traffic, to place and maintain a drum type barricade as described in MUTCD, stabilized with sand bags on each manhole cover and/or casting which extends more than two (2) inches above the existing street surface. Without limiting Developer’s obligation to conform with all provisions of MUTCD, Developer agrees to place and maintain signs as provided in subsection 6B.

15. Developer further agrees to maintain erosion barriers and to take other steps to prevent the erosion and tracking of materials from the site onto adjoining parcels, streams and public right-of-way per Chapter 27 ½ Murfreesboro City Code regarding construction site runoff controls, post construction standards and water quality protection areas.

16. In the event Developer fails to properly construct the improvements required by the plans incorporated herein and approved by the Department, during the warranty period Developer shall continue to be responsible for corrective work, notwithstanding the City overlooked such defects prior to its acceptance of the development.

17. Any notification required under this agreement shall be directed as follows:

MURFREESBORO WATER & SEWER DEPT.  
220 N.W. Broad Street  
P.O. Box 1477

Phone: 615/848-3200

Developer:

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18. The applicable ordinances, codes, policies, Standard Street Specifications, Standard Water and Sewer Specifications and other regulations of the City of Murfreesboro and the Department are incorporated herein by reference, and Developer agrees to abide by same.

19. This instrument constitutes the entire agreement of the parties, and it shall not be amended except in writing acknowledged by authorized agents or representatives of each of the parties.

20. This agreement shall be binding upon the parties hereto, their heirs, successors and assigns. The laws of Tennessee shall be applicable and venue shall be Rutherford County, Tennessee for any disputes.

This agreement made and entered into in duplicate on the day and date first above written.

\_\_\_\_\_  
CITY OF MURFREESBORO

\_\_\_\_\_  
ENTITY

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
BY

\_\_\_\_\_  
NOTARY

\_\_\_\_\_  
PRINTED NAME

My Commission Expires \_\_\_\_\_ day of \_\_\_\_\_ month of \_\_\_\_\_ year

\_\_\_\_\_  
Mailing Address

\_\_\_\_\_  
E-mail Address

\_\_\_\_\_  
Phone

\_\_\_\_\_  
FAX

EXHIBIT “A” to FIGURE 7.

1. The Department will charge the Developer a resident inspection fee of \$1.00 per linear foot based on actual footage of potable and repurified water an/dor sewer lines installed. The Department will perform video inspections of sewer lines upon substantial completion of the work – after final testing but prior to final acceptance. The Department will also inspect the sewer lines prior to warranty expiration, typically twelve (12) to eighteen (18) months after final acceptance. The Department will charge the Developer the linear foot price as determined by the bid price of a second party video inspection vendor. The Developer may contact the Department or review the Department’s website to see the latest bid results for television video inspections of sanitary sewer lines.

(Rule 1200-4-11-02, continued)

(c) Plan Review Fees shall apply to new facilities as well as the expansion or modification of existing facilities. If the submittal includes more than one listed category, the fee will be the sum of the fees listed for each individual category. Review of plans documents will not commence until all fees required by these rules are paid in full. Plan Review Fees shall be as follows:

4. Collection Systems:
    - (i) Collection Lines - \$25.00 per 250 feet or portion thereof of sewage collection line excluding service laterals. Total fee not to exceed \$1,500.
  5. Equalization Basins:
 

(i) Holding capacity equal to or greater than 5 million gallons (MG)	\$ 300
(ii) Holding capacity equal to or greater than 1 MG and less than 5 MG	\$ 200
(iii) Holding capacity equal to or greater than 0.075 MG and less than 1 MG	\$ 100
(iv) Holding capacity less than 0.075 MG	\$ 50
  6. Pumping Stations:
 

(i) Design capacity equal to or greater than 5 MGD	\$ 300
(ii) Design capacity equal to or greater than 1 MGD and less than 5 MGD	\$ 200
(iii) Design capacity equal to or greater than 0.075 MGD and less than 1 MGD	\$ 100
(iv) Design capacity less than 0.075 MGD	\$ 50
- (2) (a) Plans Review Fee - Beginning July 1, 1992, any person submitting non-transient non-community and community water system plans for approval shall be required to pay the fees listed in Parts 1. through 14. below for the purpose of plans review. The fees apply to new facilities as well as the expansion or modification of existing facilities. If the submittal includes multiple activities, the fee will be the sum of the fees listed for each individual activity. Approval of plan documents will not be granted until all fees required by Parts 1. through 14. below are paid in full. Units of local government which have been granted plans review authority in accordance with T.C.A. Section 68-13-706 shall pay an annual fee of \$1,000. Failure of local governments to pay this fee will be cause for the revocation of plans review authority.

<u>Type Activity</u>	<u>Fee Schedule</u>
1. Well or Spring Development	\$ 200
2. Chemical Control Plant	\$ 400
3. Disinfection System	
(i) Gaseous	\$ 300
(ii) Hypochlorinator	\$ 150
4. Filter Plant	\$1000
5. Pump Station	\$ 250
6. Tank	\$ 225
7. Standard Specifications	\$ 100
8. Tank Coating	\$ 50
9. Sludge Treating	\$ 150
10. Distribution Lines	
(i) 1000 feet or less	\$ 100
(ii) Greater than 1000 feet	\$ 100 + \$.01* ft over 1000
11. Change Orders	\$ 50
12. Review of Operations and Maintenance Manuals	\$ 150
13. New raw water source and site evaluation for public water systems and water bottling operations.	\$ 300
14. Miscellaneous (Includes other items not specifically mentioned above).	\$ 50

- (b) The Department shall complete its review of plan documents within thirty days of the receipt of plans containing sufficient information to allow the Department to make the necessary determinations. Fees will not be refunded for projects that are not approved or that are withdrawn voluntarily by the applicant. Plans resubmitted within 30 days of an initial denial will be reviewed without additional fees provided the scope of the project has not changed.
- (c) Penalties and interest on late payments shall be computed as specified in subparagraph (1)(e) of 1200-5-1-.32. Appeals shall be perfected as specified in subparagraphs (1)(d) of 1200-5-1-.32.

**Authority:** T.C.A. §§4-5-201 et seq., 4-5-202, 68-1-1301 et seq., 68-13-701 et seq., 68-13-704, 68-203-101 et seq., 68-221-701 et seq., and 68-221-704. **Administrative History:** Original rule filed August 9, 1991; effective September 23, 1991. Amendment filed August 12, 1992; effective September 26, 1992. Amendment filed May 2, 1994; effective July 16, 1994. Amendment filed April 12, 1996; effective June 26, 1996. Amendment filed March 5, 2002; effective May 19, 2002.



EXHIBIT "B" to FIGURE 7.

Prepared by:  
David A. Ives, Assistant City Attorney  
City of Murfreesboro, Tennessee  
P.O. Box 1044  
Murfreesboro, TN 37133-1044

INSPECTION AND MAINTENANCE AGREEMENT  
FOR PRIVATE STORMWATER MANAGEMENT FACILITIES – INDIVIDUAL OWNER

Property Identification ("Property"):

City Use:

Map:		Parcel No.:		Land Dist. Permit No.:	
Record Book:		Page No.:		MWSD File No.:	

Project Name:			
Project Address:			
Owner(s):			
Owner Address:			
City:		State:	
		Zip Code:	

**SEE LEGAL DESCRIPTION ATTACHED HERETO AS EXHIBIT A.**

This Inspection and Maintenance Agreement ("Agreement") is made this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and between \_\_\_\_\_ ("Owner", whether one or more), and the City of Murfreesboro ("City").

WHEREAS, the City is required by federal and state surface water quality regulations and its National Pollutant Discharge Elimination System (NPDES) permit to prevent surface water quality degradation from development or redevelopment activities within its jurisdiction, and the City has adopted surface water quality regulations as required and such regulations are contained in the Stormwater Management chapter of the City Code; and

WHEREAS, the Owner owns the Property identified above and has or will construct certain stormwater management facilities on the Property, and has developed a Stormwater Maintenance Plan (SWMP No. \_\_\_\_\_), as may be amended from time to time (the "Plan") for the maintenance of those facilities, which the City has reviewed and approved, and a copy of which will be maintained at the Murfreesboro Water & Sewer Department. A drawing showing the general area of the facilities covered by the Plan is attached to this Agreement for ease of identification.

THEREFORE, in consideration of the benefits received by the Owner as a result of the approval by the City of the Plan, the Owner does hereby covenant and agree with the City as follows:

1. The Owner shall provide adequate long term maintenance and continuation of the stormwater control measures described in the Plan, to ensure that all stormwater facilities are and remain in proper working condition. The Owner shall perform inspection and preventative maintenance activities in accord with the Plan.
2. The Owner shall maintain a copy of the Plan on site, together with a record of inspections and maintenance actions required by the Plan. The Owner shall document the times of inspections, remedial actions taken to repair, modify or reconstruct the system, the state of control measures, and notification of any planned change in responsibility for the system. The City may require that the Owner's records be submitted to the City.
3. If it is later determined that the City's NPDES permit clearly directs Owners or the City to manage stormwater treatment systems differently than specified in the Plan, the direction of the NPDES permit shall override the provisions of the Plan.

4. The Owner hereby grants to the City the right of ingress, egress and access to enter the Property at reasonable times and in a reasonable manner for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the facilities. The Owner hereby grants to the City the right to install and maintain equipment to monitor or test the performance of the stormwater control system for quality and quantity upon reasonable notice to Owner.
5. If the City finds that the Owner has not maintained the facilities, the City may order the Owner to make repairs or improvements to bring the facilities up to the standards set forth in the Plan. If the work is not performed within the time specified by the City, the City may enter the property and take any action necessary to maintain or repair the stormwater management facilities; PROVIDED, HOWEVER, that the City shall in no event be deemed obligated to maintain or repair the stormwater management facilities, and nothing in this Agreement shall ever be construed to impose or create any such obligation on the City.
6. If the City incurs expenses in maintaining the stormwater control facilities, and the Owner fails to reimburse the City for such expenses within 45 days after a written notice, the City may collect said expenses from the Owner through appropriate legal action, and the Owner shall be liable for the reasonable expenses of collection, including all court costs and attorney fees.
7. The Owner and the Owner's heirs, administrators, executors, assigns, and any other successor in interest shall indemnify and hold the City harmless from any and all damages, accidents, casualties, occurrences, claims or attorney's fees which might arise or be asserted, in whole or in part, against the City from the construction, presence, existence, or maintenance of the stormwater control facilities subject to the Plan and this Agreement. In the event a claim is asserted against the City, its officers, agents or employees, the City shall notify the Owner, who shall defend at Owner's expense any suit or other claim. If any judgment or claims against the City shall be allowed, the Owner shall pay all costs and expenses in connection therewith. The City will not indemnify, defend or hold harmless in any fashion the Owner from any claims arising from any failure, regardless of any language in any attachment of other document that the Owner may provide.
8. No waiver of any provision of this Agreement shall affect the right of any party thereafter to enforce such provision or to exercise any right or remedy available to it in the event of any other default.
9. The City, at Owner's expense, shall record this Agreement with the Register of Deeds of Rutherford County, Tennessee; this Agreement shall constitute a covenant running with the land, and shall be binding upon the Owner and the Owner's heirs, administrators, executors, assigns, and any other successors in interest.
10. The Owner shall have a Tennessee-licensed engineer, surveyor or landscape architect inspect the facilities and certify to the City that the constructed facilities conform substantially to the approved Plan. If the constructed condition varies significantly from the approved Plan, appropriately revised calculations shall be provided to the City and the Plan shall be amended accordingly.
11. Owner agrees that the failure to follow the provisions and requirements of the Plan may result in the revocation of previously approved credits to stormwater user fees or the imposition of such stormwater user fees or of additional stormwater user fees.
12. The Owner agrees that for any systems to be maintained by a property owners' association, deed restrictions and covenants for the subdivision or other development will include mandatory membership in the property owner's association responsible for providing maintenance of the system, will require the association to maintain the stormwater system, will prohibit termination of this covenant by unilateral action of the association, and provide for unpaid dues or assessments to constitute a lien upon the property of an owner upon recording a notice of non-payment.
13. This Agreement must be re-approved and re-executed by the City if all or a portion of the Property is subdivided or assembled with other property.

Owner: \_\_\_\_\_ Date: \_\_\_\_\_  
 Signature by Individual

Owner: \_\_\_\_\_ Date: \_\_\_\_\_  
 Signature by Individual

State of \_\_\_\_\_ County of \_\_\_\_\_

Personally appeared before me, the undersigned Notary Public of the state and county mentioned, \_\_\_\_\_, with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence), and executed this Agreement (Inspection and Maintenance Agreement for Private Stormwater Management Facilities) for the purposes contained herein.

Witness my hand and official seal at office, this \_\_\_\_\_ day of \_\_\_\_\_, of the year \_\_\_\_\_.

Notary Public: \_\_\_\_\_

My Commission Expires: \_\_\_\_\_

**Accepted by:**

\_\_\_\_\_  
For the City of Murfreesboro  
Water and Sewer Department

State of \_\_\_\_\_ County of \_\_\_\_\_

Personally appeared before me, the undersigned Notary Public of the state and county mentioned, \_\_\_\_\_, with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence), and executed this Agreement (Inspection and Maintenance Agreement for Private Stormwater Management Facilities) on behalf of the City of Murfreesboro Water & Sewer Department for the purposes contained herein.

Witness my hand and official seal at office, this \_\_\_\_\_ day of \_\_\_\_\_, of the year \_\_\_\_\_.

Notary Public: \_\_\_\_\_

My Commission Expires: \_\_\_\_\_



Prepared by:  
David A. Ives, Assistant City Attorney  
City of Murfreesboro, Tennessee  
P.O. Box 1044  
Murfreesboro, TN 37133-1044

**INSPECTION AND MAINTENANCE AGREEMENT  
FOR PRIVATE STORMWATER MANAGEMENT FACILITIES – PARTNERSHIP**

Property Identification ("Property"):

City Use:

Map:		Parcel No.:		Land Dist. Permit No.:	
Record Book:		Page No.:		MWSD File No.:	

Project Name:					
Project Address:					
Owner:					
Owner Address:					
City:		State:		Zip Code:	

**SEE LEGAL DESCRIPTION ATTACHED HERETO AS EXHIBIT A.**

This Inspection and Maintenance Agreement ("Agreement") is made this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and between \_\_\_\_\_ ("Owner", whether one or more), and the City of Murfreesboro ("City").

WHEREAS, the City is required by federal and state surface water quality regulations and its National Pollutant Discharge Elimination System (NPDES) permit to prevent surface water quality degradation from development or redevelopment activities within its jurisdiction, and the City has adopted surface water quality regulations as required and such regulations are contained in the Stormwater Management chapter of the City Code; and

WHEREAS, the Owner owns the Property identified above and has or will construct certain stormwater management facilities on the Property, and has developed a Stormwater Maintenance Plan (SWMP No. \_\_\_\_\_), as may be amended from time to time, the "Plan") for the maintenance of those facilities, which the City has reviewed and approved.

THEREFORE, in consideration of the benefits received by the Owner as a result of the approval by the City of the Plan, the Owner does hereby covenant and agree with the City as follows:

1. The Owner shall provide adequate long term maintenance and continuation of the stormwater control measures described in the Plan, to ensure that all stormwater facilities are and remain in proper working condition. The Owner shall perform inspection and preventative maintenance activities in accord with the Plan.
2. The Owner shall maintain a copy of the Plan on site, together with a record of inspections and maintenance actions required by the Plan. The Owner shall document the times of inspections, remedial actions taken to repair, modify or reconstruct the system, the state of control measures, and notification of any planned change in responsibility for the system. The City may require that the Owner's records be submitted to the City.
3. If it is later determined that the City's NPDES permit clearly directs Owners or the City to manage stormwater treatment systems differently than specified in the Plan, the direction of the NPDES permit shall override the provisions of the Plan.
4. The Owner hereby grants to the City the right of ingress, egress and access to enter the Property at reasonable times and in a reasonable manner for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the

facilities. The Owner hereby grants to the City the right to install and maintain equipment to monitor or test the performance of the stormwater control system for quality and quantity upon reasonable notice to Owner.

5. If the City finds that the Owner has not maintained the facilities, the City may order the Owner to make repairs or improvements to bring the facilities up to the standards set forth in the Plan. If the work is not performed within the time specified by the City, the City may enter the property and take any action necessary to maintain or repair the stormwater management facilities; PROVIDED, HOWEVER, that the City shall in no event be deemed obligated to maintain or repair the stormwater management facilities, and nothing in this Agreement shall ever be construed to impose or create any such obligation on the City.
6. If the City incurs expenses in maintaining the stormwater control facilities, and the Owner fails to reimburse the City for such expenses within 45 days after a written notice, the City may collect said expenses from the Owner through appropriate legal action, and the Owner shall be liable for the reasonable expenses of collection, including all court costs and attorney fees.
7. The Owner and the Owner's heirs, administrators, executors, assigns, and any other successor in interest shall indemnify and hold the City harmless from any and all damages, accidents, casualties, occurrences, claims or attorney's fees which might arise or be asserted, in whole or in part, against the City from the construction, presence, existence, or maintenance of the stormwater control facilities subject to the Plan and this Agreement. In the event a claim is asserted against the City, its officers, agents or employees, the City shall notify the Owner, who shall defend at Owner's expense any suit or other claim. If any judgment or claims against the City shall be allowed, the Owner shall pay all costs and expenses in connection therewith. The City will not indemnify, defend or hold harmless in any fashion the Owner from any claims arising from any failure, regardless of any language in any attachment of other document that the Owner may provide.
8. No waiver of any provision of this Agreement shall affect the right of any party thereafter to enforce such provision or to exercise any right or remedy available to it in the event of any other default.
9. The City, at Owner's expense, shall record this Agreement with the Register of Deeds of Rutherford County, Tennessee; this Agreement shall constitute a covenant running with the land, and shall be binding upon the Owner and the Owner's heirs, administrators, executors, assigns, and any other successors in interest.
10. The Owner shall have a Tennessee-licensed engineer, surveyor or landscape architect inspect the facilities and certify to the City that the constructed facilities conform substantially to the approved Plan. If the constructed condition varies significantly from the approved Plan, appropriately revised calculations shall be provided to the City and the Plan shall be amended accordingly.
11. Owner agrees that the failure to follow the provisions and requirements of the Plan may result in the revocation of previously approved credits to stormwater user fees or the imposition of such stormwater user fees or of additional stormwater user fees.
12. The Owner agrees that for any systems to be maintained by a property owner's association, deed restrictions and covenants for the subdivision or other development will include mandatory membership in the property owner's association responsible for providing maintenance of the system, will require the association to maintain the stormwater system, will prohibit termination of this covenant by unilateral action of the association, and provide for unpaid dues or assessments to constitute a lien upon the property of an owner upon recording a notice of non-payment
13. This Agreement must be re-approved and re-executed by the City if all or a portion of the Property is subdivided or assembled with other property.

Partnership  
Name:

\_\_\_\_\_

Date:

\_\_\_\_\_

Signature by Partner, representing a Partnership  
Title: \_\_\_\_\_

State of \_\_\_\_\_ County of \_\_\_\_\_

Personally appeared before me, the undersigned Notary Public of the state and county mentioned, \_\_\_\_\_, with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence), and executed this Agreement (Inspection and Maintenance Agreement for Private Stormwater Management Facilities) as a partner of \_\_\_\_\_ for the purposes contained herein.

Witness my hand and official seal at office in \_\_\_\_\_, this \_\_\_\_\_ day of \_\_\_\_\_, of the year \_\_\_\_\_.

Notary Public: \_\_\_\_\_

My Commission Expires: \_\_\_\_\_

**Accepted by:**

\_\_\_\_\_  
For the City of Murfreesboro  
Water and Sewer Department

State of \_\_\_\_\_ County of \_\_\_\_\_

Personally appeared before me, the undersigned Notary Public of the state and county mentioned, \_\_\_\_\_, with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence), and executed this Agreement (Inspection and Maintenance Agreement for Private Stormwater Management Facilities) on behalf of the City of Murfreesboro Water & Sewer Department for the purposes contained herein.

Witness my hand and official seal at office in \_\_\_\_\_, this \_\_\_\_\_ day of \_\_\_\_\_, of the year \_\_\_\_\_.

Notary Public: \_\_\_\_\_

My Commission Expires: \_\_\_\_\_



Prepared by:  
 David A. Ives, Assistant City Attorney  
 City of Murfreesboro, Tennessee  
 P.O. Box 1044  
 Murfreesboro, TN 37133-1044

**INSPECTION AND MAINTENANCE AGREEMENT  
 FOR PRIVATE STORMWATER MANAGEMENT FACILITIES –CORPORATE AND LLC**

Property Identification ("Property"):

City Use:

Map:		Parcel No.		Land Dist. Permit No.:	
Record Book:		Page No.		MWSD File No.:	

Project Name:					
Project Address:					
Owner:					
Owner Address:					
City:		State:		Zip Code:	

**SEE LEGAL DESCRIPTION ATTACHED HERETO AS EXHIBIT A.**

This Inspection and Maintenance Agreement ("Agreement") is made this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and between \_\_\_\_\_ ("Owner", whether one or more), and the City of Murfreesboro ("City").

WHEREAS, the City is required by federal and state surface water quality regulations and its National Pollutant Discharge Elimination System (NPDES) permit to prevent surface water quality degradation from development or redevelopment activities within its jurisdiction, and the City has adopted surface water quality regulations as required and such regulations are contained in the Stormwater Management chapter of the City Code; and

WHEREAS, the Owner owns the Property identified above and has or will construct certain stormwater management facilities on the Property, and has developed a Stormwater Maintenance Plan (SWMP No. \_\_\_\_\_), as may be amended from time to time, the "Plan") for the maintenance of those facilities, which the City has reviewed and approved, and a copy of which will be maintained at the Murfreesboro Water & Sewer Department. A drawing showing the general area of the facilities covered by the Plan is attached to this Agreement for ease of identification.

THEREFORE, in consideration of the benefits received by the Owner as a result of the approval by the City of the Plan, the Owner does hereby covenant and agree with the City as follows:

1. The Owner shall provide adequate long term maintenance and continuation of the stormwater control measures described in the Plan, to ensure that all stormwater facilities are and remain in proper working condition. The Owner shall perform inspection and preventative maintenance activities in accord with the Plan.
2. The Owner shall maintain a copy of the Plan on site, together with a record of inspections and maintenance actions required by the Plan. The Owner shall document the times of inspections, remedial actions taken to repair, modify or reconstruct the system, the state of control measures, and notification of any planned change in responsibility for the system. The City may require that the Owner's records be submitted to the City.
3. If it is later determined that the City's NPDES permit clearly directs Owners or the City to manage stormwater treatment systems differently than specified in the Plan, the direction of the NPDES permit shall override the provisions of the Plan.

4. The Owner hereby grants to the City the right of ingress, egress and access to enter the Property at reasonable times and in a reasonable manner for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the facilities. The Owner hereby grants to the City the right to install and maintain equipment to monitor or test the performance of the stormwater control system for quality and quantity upon reasonable notice to Owner.
5. If the City finds that the Owner has not maintained the facilities, the City may order the Owner to make repairs or improvements to bring the facilities up to the standards set forth in the Plan. If the work is not performed within the time specified by the City, the City may enter the property and take any action necessary to maintain or repair the stormwater management facilities; PROVIDED, HOWEVER, that the City shall in no event be deemed obligated to maintain or repair the stormwater management facilities, and nothing in this Agreement shall ever be construed to impose or create any such obligation on the City.
6. If the City incurs expenses in maintaining the stormwater control facilities, and the Owner fails to reimburse the City for such expenses within 45 days after a written notice, the City may collect said expenses from the Owner through appropriate legal action, and the Owner shall be liable for the reasonable expenses of collection, including all court costs and attorney fees.
7. The Owner and the Owner's heirs, administrators, executors, assigns, and any other successor in interest shall indemnify and hold the City harmless from any and all damages, accidents, casualties, occurrences, claims or attorney's fees which might arise or be asserted, in whole or in part, against the City from the construction, presence, existence, or maintenance of the stormwater control facilities subject to the Plan and this Agreement. In the event a claim is asserted against the City, its officers, agents or employees, the City shall notify the Owner, who shall defend at Owner's expense any suit or other claim. If any judgment or claims against the City shall be allowed, the Owner shall pay all costs and expenses in connection therewith. The City will not indemnify, defend or hold harmless in any fashion the Owner from any claims arising from any failure, regardless of any language in any attachment of other document that the Owner may provide.
8. No waiver of any provision of this Agreement shall affect the right of any party thereafter to enforce such provision or to exercise any right or remedy available to it in the event of any other default.
9. The City, at Owner's expense, shall record this Agreement with the Register of Deeds of Rutherford County, Tennessee; this Agreement shall constitute a covenant running with the land, and shall be binding upon the Owner and the Owner's heirs, administrators, executors, assigns, and any other successors in interest.
10. The Owner shall have a Tennessee-licensed engineer, surveyor or landscape architect inspect the facilities and certify to the City that the constructed facilities conform substantially to the approved Plan. If the constructed condition varies significantly from the approved Plan, appropriately revised calculations shall be provided to the City and the Plan shall be amended accordingly.
11. Owner agrees that the failure to follow the provisions and requirements of the Plan may result in the revocation of previously approved credits to stormwater user fees or the imposition of such stormwater user fees or of additional stormwater user fees.
12. The Owner agrees that for any systems to be maintained by a property owner's association, deed restrictions and covenants for the subdivision or other development will include mandatory membership in the property owner's association responsible for providing maintenance of the system, will require the association to maintain the stormwater systems, will prohibit termination of this covenant by unilateral action of the association, and provide for unpaid dues or assessments to constitute a lien upon the property of an owner upon recording a notice of non-payment.
13. This Agreement must be re-approved and re-executed by the City if all or a portion of the Property is subdivided or assembled with other property.

Entity Name:

\_\_\_\_\_

Date:

\_\_\_\_\_

Signature by Officer of Corporation or Manager of LLC  
 Title: \_\_\_\_\_

State of \_\_\_\_\_ County of \_\_\_\_\_

Personally appeared before me, the undersigned Notary Public of the state and county mentioned, \_\_\_\_\_, with whom I am personally acquainted (or proved to me on the basis of

satisfactory evidence), and executed this Agreement (Inspection and Maintenance Agreement for Private Stormwater Management Facilities) as the \_\_\_\_\_ of \_\_\_\_\_, for the purposes contained herein.

Witness my hand and official seal at office in \_\_\_\_\_, this \_\_\_\_\_ day of \_\_\_\_\_, of the year \_\_\_\_\_.

Notary Public: \_\_\_\_\_

My Commission Expires: \_\_\_\_\_

**Accepted by:**

\_\_\_\_\_  
For the City of Murfreesboro  
Water and Sewer Department

State of \_\_\_\_\_ County of \_\_\_\_\_

Personally appeared before me, the undersigned Notary Public of the state and county mentioned, \_\_\_\_\_, with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence), and executed this Agreement (Inspection and Maintenance Agreement for Private Stormwater Management Facilities) on behalf of the City of Murfreesboro Water & Sewer Department for the purposes contained herein.

Witness my hand and official seal at office in \_\_\_\_\_, this \_\_\_\_\_ day of \_\_\_\_\_, of the year \_\_\_\_\_.

Notary Public: \_\_\_\_\_

My Commission Expires: \_\_\_\_\_



Figure 8.



# Pre-Construction Activity Inspection

LP# \_\_\_\_\_ Insp.# \_\_\_\_\_

[www.murfreesborotn.gov/government](http://www.murfreesborotn.gov/government)

Planning & Engineering Dept.  
City Hall, Second Floor  
Murfreesboro, TN 37130  
(615) 893-6441  
Water and Sewer Dept.  
(615) 848-3200

Name/Developer: \_\_\_\_\_ Phase/Section: \_\_\_\_\_ File No. \_\_\_\_\_

Contractor: \_\_\_\_\_ On-site EPSC rep.: \_\_\_\_\_

**Pre-Construction Meeting; date:** \_\_\_/\_\_\_/\_\_\_

Receiving stream: \_\_\_\_\_

- Yes  No SWPPP has been prepared by qualified person(s).
- Yes  No Discharge into or above impaired waters?
- Yes  No TDEC CGP siltation-impairment requirements apply.
- Yes  No TDEC buffer zone requirements applicable.
- Yes  No TDEC ARAP applicable.  Obtained
- Yes  No City's water quality protection area applicable.
- Yes  No Episc rep. has attended  State  City episc training.
- Yes  No Operator explained how topsoil will be managed.
- Yes  No Wood will be mulched and  used for episc.
- Yes  No TMDL applies. Parameter(s): \_\_\_\_\_
- Yes  No  NA SWPPP provides record of TMDL eligibility.
- Yes  No  NA Steep slope protections identified and planned.
- Yes  No  NA S/water run-on will be diverted from active construction.

### Responsible parties issues

- Yes  No Multiple contractors on-site affecting storm water runoff:
- Electric  Gas  W/S  Cable/Optic  Episc specialist
- Yes  No SWPPP identifies when contractors are responsible for episc.

### Inspections

- Yes  No EPSC rep. explained inspection protocol and frequency.
- Yes  No EPSC rep. showed and explained inspection log and forms.
- Yes  No City's inspection schedule and personnel identified.

### Pre-Con EPSC Inspection

- Yes  No SWPPP is present on site.
- Yes  No EPSC representative present.
- Yes  No Place for posting of permits is identified.
- Yes  No Construction exit (1½-2½" stone & geotextile) installed.
- Yes  No Silt fence or other perimeter control placed on contour.
- Yes  No Silt fence/perimeter control properly staked and buried.
- Yes  No  NA Sediment traps properly located and installed.
- Yes  No  NA Pond is located, sized, and installation is scheduled.
- Yes  No  NA Riparian buffer/water quality protection area is marked.

The undersigned certify they have discussed erosion prevention and sediment controls for the project referenced above. The project representative certifies understanding of the Murfreesboro land disturbance permitting requirements and that failure to comply may result in compliance orders, penalties, and/or stop work orders until compliance is accomplished.

Project rep.: \_\_\_\_\_ Title (if applicable): \_\_\_\_\_

Inspector: \_\_\_\_\_ Date and Time: \_\_\_/\_\_\_/\_\_\_ at \_\_\_ : \_\_\_ am/pm

PreCon 11-2005 Original – Owner/Developer/Responsible Party Yellow – City Pink – On-site representative

## Table of Murfreesboro and Tennessee Permit Requirements

Listed below are key provisions of Murfreesboro City Code and regulations and State of Tennessee requirements. Additional detail may be found at [www.murfreesborotn.gov/government/water\\_sewer/stormwater.htm](http://www.murfreesborotn.gov/government/water_sewer/stormwater.htm) and at [www.state.tn.us/environment/permits/conststrm.php](http://www.state.tn.us/environment/permits/conststrm.php). The abbreviation *epsc* refers erosion prevention and sediment controls. Inspection no. is assigned by the inspector in this format: yyymmdd##, where year, month and day are followed by 01 for the inspector's first inspection record of that day, 02 for the second, etc. Ex., the first inspection of July 15, 2005, would be 2005071501.

	City Code	State CGP	Condition/Requirement
<input type="checkbox"/>	27 ½-7(e)	3.1.1	SWPPP must be prepared by person having working knowledge of <i>epsc</i> , such as CPESC certification. Calculations for sediment ponds shall be done by registered P.E. or landscape architect.
<input type="checkbox"/>	--	3.3.2	<u>The following to be posted at site entrance:</u> State NOC with pmt tracking no.; name of owner, operator or local contact person; description of project; location of SWPPP (should be available at site)
<input type="checkbox"/>	--	3.5.8.1	Inspectors on state-regulated projects must have completed the TDEC/UT <i>epsc</i> "Fundamentals" course or an equivalent course. Effective date, June, 2007. Copy of the certification should be kept on site.
<input type="checkbox"/>	--	3.1	The SWPPP developed by the initial permittee (typically owner/developer) must assign responsibilities to various operators (typically contractors) and coordinate all BMPs at the construction site.
<input type="checkbox"/>	27 ½-5 (h)	3.5.8.2.	The Permittee shall conduct and record regular inspections of <i>epsc</i> for the purpose of preventing Erosion and transport of Sediment off the property to stormwater drainage system and to waters of the state. Schedule should be twice per week, at least 72 hours apart. Permittee must keep record book. Inspections must address storm water drainage system; repairs & remedies of <i>epsc</i> ; whether construction is in compliance with approved plans; notes re: variations from approved plans or specs; and violations. State requires that inspections address disturbed areas; <i>epsc</i> & their functionality; structural controls; materials storage areas; vehicle exits; outfalls and discharge points for evidence of sediment loss. Records shall include name and title of inspector(s), dates; major observations related to SWPPP implementation; places where sediment has left site and where <i>epsc</i> has/have failed or are inadequate.
<input type="checkbox"/>	Priority Construction Activity	4.4.1	Impaired waters: Sinking Creek, Lytle Creek, Dry Branch, Bear Branch, unnamed trib to Bushman Creek, West Fork Stones River downstream of Lytle Creek (just south of Manson Pike), WFSR upstream of Middle Fork SR. For these watersheds, <i>epsc</i> designed to function in event of a 5-year, 24-hour storm. For drainage areas of five acres or more, sediment basin to contain runoff from a 5-year, 24-hour rain event; or equivalent control measures. Weekly <i>epsc</i> inspections to be certified on appendix C of the state's CGP. Records kept on site.
<input type="checkbox"/>	27 ½-7(e)(16)	3.5.3.1 d)	Clean-up of sediment that escapes site, prior to reaching waters of the state
<input type="checkbox"/>	EPSC Manual	3.5.3.2	Vegetative practices: Use of mulch [MU]; temporary vegetation [TS]; erosion control blanket or matting [MA]; sod [SO]; permanent vegetation [PS]; polyacrlamide [PAM]. Notes: MA to be used where slope is > 2.5:1 or in high flow channels (> 5 fps).
<input type="checkbox"/>	EPSC Manual	3.5.3.3	Structural practices: Check dam [CD]; construction exit [CE]; construction road stabilization [CRS]; dewatering structure [DW]; diversion [DI]; filter ring [FR]; gabion [GA]; geotextile [GE]; gradient treatment [GT]; riprap [RR]; sediment basin with wet pool and riser outlet[SB]; sediment trap [ST]; silt fence on contour, well entrenched and well staked, max. drainage area ¼ acre for every 100 feet [SF]; slope drain [SD]; storm drain inlet protection [IP]; storm drain outlet protection [OP]; surface roughening by mechanized equip. to provide rough texture to soils at final grade [SR]; stream diversion channel [SDC] for utility crossings, etc. (ARAP required); temporary stream crossing [TSC] (ARAP required); bioengineering stream bank stabilization [SBS].
<input type="checkbox"/>	--	State rule 1200-4-7	Persons who conduct any activity that involves the alteration of waters of the State require a state and possibly a federal permit. <a href="http://www.state.tn.us/environment/permits/arap.php">http://www.state.tn.us/environment/permits/arap.php</a>
<input type="checkbox"/>	--	3.5.10	The state-required SWPPP must include documentation supporting a determination of permit eligibility with regard to waters that have an approved <u>TMDL</u> for a pollutant of concern.

Land Disturbance Permits issued by Building and Codes Department contain the following statements:

1. Selection and installation of erosion prevention and sediment controls shall correspond to the EPSC/SWPPP plan submitted to the City as a part of the Land Disturbance Permit application and approved by the City Engineering Department.
2. Installation, inspections and maintenance of EPSC shall comply with requirements set forth in Murfreesboro City Code, with respect to planning and design, as listed at City Code Chapter 27 ½ - 7 (d); and with respect to inspections and frequency of inspections, as listed at City Code Chapter 27 ½ - 5 (h).
3. Installation and maintenance of EPSC shall be accomplished according to standard practice as described in the City-adopted "Tennessee Erosion Prevention and Sediment Control Handbook – A Guide for Protection of State Waters through the use of Best Management Practices during Land Disturbing Practices."

PreCon 11-200

Figure 9.



# Construction Activity Inspection

LP# \_\_\_\_\_ Insp.# \_\_\_\_\_

[www.murfreesborotn.gov/government](http://www.murfreesborotn.gov/government)

Planning & Engineering Dept.  
 City Hall, Second Floor  
 Murfreesboro, TN 37130  
 (615) 893-6441  
 Water and Sewer Dept.  
 (615) 848-3200

Name/Location: \_\_\_\_\_ Phase/Section: \_\_\_\_\_ File No.: \_\_\_\_\_  
 Contractor: \_\_\_\_\_ On-site EPSC rep.: \_\_\_\_\_  
 Date: \_\_\_\_\_ Weather:  Dry  Wet Last Rainfall Date: \_\_\_\_\_ Amount \_\_\_\_\_ in  
 Is rep. knowledgeable of  SWPPP  design EPSC  inspection requirements  maintenance requirements?

**General requirements & site conditions**

- Yes  No SWPPP is present on site and up-to-date.
- Yes  No Epsc are installed according to SWPPP.
- Yes  No Logbook is present showing inspections & epsc repairs.
- Yes  No EPSC rep. has attended TDEC epsc class.

**Inspections and recordkeeping**

- Yes  No Frequency of inspections meets twice per week standard.
- Yes  No Inspections record epsc failures, inadequacies & repairs.
- Yes  No Log records dates of major grading, rainfall dates & totals.
- Yes  No Inspections include investigation of s/water drainage system.
- Yes  No Inspections include investigation of outfalls & discharge points.
- Yes  No TDEC weekly/quarterly insp. forms up to date & on site.
- Yes  No  NA Records show changes to epsc from approved SWPPP.

**Special issues**

- Yes  No  NA TDEC buffer zone is protected.
- Yes  No  NA City's water quality protection area is protected.
- Yes  No  NA Work regulated under state ARAP is in process.
- Yes  No  NA Parties do not agree on particular epsc responsibilities.
- Yes  No  NA Lots at final grade have been temporarily stabilized.
- Yes  No Site has been sufficiently stabilized; LDP can be terminated.

**Performance bond issues**

- Yes  No Stormwater conveyance systems \_\_\_\_\_ % complete.
- Yes  No Storm water conveyance system free of sediment.
- Yes  No Failure to install epsc: \_\_\_\_\_ % complete.
- Yes  No Record drawings of stormwater systems filed.

**Inspector's comments**

- Yes  No  NA Discharge points contain sediment.
- Yes  No  NA Sediment loss to stream evident.
- Yes  No  NA Discharge causing in-stream color contrast.
- Yes  No  NA Sediment has been removed from streets.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Erosion prevention and sediment controls**

EPSC	Compliance		
	NA	Y	N
Removal of vegetative cover < ten days prior to grading	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Preconstruction epsc in place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Construction exit to standard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inlet protections in place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temporary erosion control in areas un-worked for 15 days	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Epsc for stockpiled soils	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Silt fence maintained and at < 50% capacity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sediment controls maintained and at < 50% capacity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sediment traps located and constructed correctly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sediment pond sized correctly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sediment pond outlet structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Runoff is diverted around disturbed areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Less than 50 acres is disturbed at one time (phasing).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Slopes > 2.5:1 are stabilized with matting or e.c. blankets.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Concentrated flow areas stabilized w/matting or blankets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Muddy water from work areas treated prior to stream	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

You are hereby given notice to correct circled items by \_\_\_/\_\_\_/\_\_\_, and epsc violations within \_\_\_ hours. Continued non-compliance may result in citation, civil penalty and/or stop work order. Inspector tel. no.: \_\_\_\_\_

Report rec'd by: \_\_\_\_\_ Title (if applicable): \_\_\_\_\_

Inspector: \_\_\_\_\_ Date and Time: \_\_\_/\_\_\_/\_\_\_ at \_\_\_ : \_\_\_ am/pm

## Table of Murfreesboro and Tennessee Permit Requirements

Listed below are key provisions of Murfreesboro City Code, regulations and State of Tennessee requirements. Additional detail may be found at [www.murfreesborotn.gov/government/water\\_sewer/stormwater.htm](http://www.murfreesborotn.gov/government/water_sewer/stormwater.htm) and at [www.state.tn.us/environment/permits/conststrm.php](http://www.state.tn.us/environment/permits/conststrm.php). The abbreviation *epsc* refers erosion prevention and sediment controls.

	City Code	State CGP	Condition/Requirement
<input type="checkbox"/>	--	3.3.2	<u>The following to be posted at site entrance</u> : State NOC with pmt tracking no.; name of owner, operator or local contact person; description of project; location of SWPPP (should be available at site)
<input type="checkbox"/>	--	3.5.8.1	Inspectors on state-regulated projects must have completed the TDEC/UT <i>epsc</i> "Fundamentals" course or an equivalent course. Effective date, June, 2007. An engineer or landscape architect who prepared the SWPPP may also conduct the required inspections. Copy of the certification should be kept on site.
<input type="checkbox"/>	27 ½-5 (h)	3.5.8.2.	The Permittee shall conduct and record regular inspections of <i>epsc</i> for the purpose of preventing Erosion and transport of Sediment off the property to stormwater drainage system and to waters of the state. Inspections must address storm water drainage system; repairs & remedies of <i>epsc</i> ; whether construction is in compliance with approved plans; notes re: variations from approved plans or specs; and violations. State CGP adds that inspections shall address disturbed areas; <i>epsc</i> and their functionality; structural controls; materials storage areas exposed to rainfall; vehicle exits; outfalls and discharge points for evidence of sediment loss. Records shall include name and title of inspector(s), dates; major observations related to SWPPP implementation; places where sediment has left site and where <i>epsc</i> has/have failed or are inadequate.
<input type="checkbox"/>	27 ½-5 (h)(3)	3.5.8.2.	Permittee must inspect <i>epsc</i> at least <b>twice per week</b> , at least 72 hours apart. Portions of site temporarily stabilized may be inspected at a once per month frequency, provided a written request with justification has been submitted to the local TDEC office. Permittee must keep record book.
<input type="checkbox"/>	Priority Construction Activity	4.4.1	Impaired waters: Sinking Creek, Lytle Creek, Dry Branch, Bear Branch, unnamed trib to Bushman Creek, West Fork Stones River downstream of Lytle Creek (just south of Manson Pike), WFSR upstream of Middle Fork SR. For these watersheds, <i>epsc</i> designed to function in event of a 5-year, 24-hour storm. For drainage areas of five acres or more, sediment basin to contain runoff from a 5-year, 24-hour rain event; or equivalent control measures. Weekly <i>epsc</i> inspections to be certified on appendix C of the state's CGP. Records kept on site.
<input type="checkbox"/>	27 ½-7(e)(16)	3.5.3.1 d)	Clean-up of sediment that escapes site, prior to reaching waters of the state
<input type="checkbox"/>	EPSC Manual	3.5.3.2	Vegetative practices: Use of mulch [MU]; temporary vegetation [TS]; erosion control blanket or matting [MA]; sod [SO]; permanent vegetation [PS]; polyacrilamide [PAM]. Notes: MA to be used where slope is > 2.5:1 or in high flow channels (> 5 fps).
<input type="checkbox"/>	EPSC Manual	3.5.3.3	Structural practices: Check dam [CD]; construction exit [CE]; construction road stabilization [CRS]; dewatering structure [DW]; diversion [DI]; filter ring [FR]; gabion [GA]; geotextile [GE]; gradient treatment [GT]; riprap [RR]; sediment basin with wet pool and riser outlet[SB]; sediment trap [ST]; silt fence on contour, well entrenched and well staked, max. drainage area ¼ acre for every 100 feet [SF]; slope drain [SD]; storm drain inlet protection [IP]; storm drain outlet protection [OP]; surface roughening by mechanized equip. to provide rough texture to soils at final grade [SR]; stream diversion channel [SDC] for utility crossings, etc. (ARAP required); temporary stream crossing [TSC] (ARAP required); bioengineering stream bank stabilization [SBS].
<input type="checkbox"/>	--	State rule 1200-4-7	Persons who conduct any activity that involves the alteration of waters of the State require a state and possibly a federal permit. <a href="http://www.state.tn.us/environment/permits/arap.php">http://www.state.tn.us/environment/permits/arap.php</a>
<input type="checkbox"/>	--	3.5.10	The state-required SWPPP must include documentation supporting a determination of permit eligibility with regard to waters that have an approved <a href="#">TMDL</a> for a pollutant of concern.

Land Disturbance Permits issued by Building and Codes Department contain the following statements:

4. Selection and installation of erosion prevention and sediment controls shall correspond to the EPSC/SWPPP plan submitted to the City as a part of the Land Disturbance Permit application and approved by the City Engineering Department.
5. Installation, inspections and maintenance of EPSC shall comply with requirements set forth in Murfreesboro City Code, with respect to planning and design, as listed at City Code Chapter 27 ½ - 7 (d); and with respect to inspections and frequency of inspections, as listed at City Code Chapter 27 ½ - 5 (h).
6. Installation and maintenance of EPSC shall be accomplished according to standard practice as described in the City-adopted "Tennessee Erosion Prevention and Sediment Control Handbook – A Guide for Protection of State Waters through the use of Best Management Practices during Land Disturbing Practices."

## SECTION 3 DEPARTMENT POLICIES

### 3.1 Use of Department Sewerage Facilities

The Department has developed regulations governing the types of wastes that can be discharged into its sewers in order to protect the facilities of the Department and their operations and to meet its Federal and State discharge requirements. The City of Murfreesboro Code – Section 33 Section III – Sewer Usage and Specifications sets forth these requirements. These provisions establish conditions under which certain users are required to obtain permits for use of Department sewerage facilities. Developers whose sewage discharges require them to obtain a permit shall not be allowed to connect their facilities to the Department’s lateral sewers or mains until written notification is provided by the Department allowing the connection. All users must comply with the discharge prohibitions established in the City of Murfreesboro Ordinance – Chapter 33 Section III.

#### 3.1.1 Industrial Discharge Application

In the event that the use of sewerage facilities is requested by a facility that may be classified under a Standard Industrial Code (SIC), then an **Application for Industrial Discharge Permit** (see **Figure 10**) shall be completed and submitted to the Murfreesboro Water & Sewer Department for evaluation. MWSD does not guarantee usage of its sewerage facilities to any user and may at its own discretion deny connection to the system due to a number of reasons, including, but not limited to hydraulic capacity limitations, or contaminant loading limitations, and biological oxygen demand.

#### 3.1.2 Wastewater Fats, Oils & Grease (FOG) Application

1. All persons seeking to establish commercial or institutional kitchens, or any other commercial or industrial enterprise that generates either fats, oils or grease, whether animal, vegetable or mineral in origin, shall submit a **Wastewater Fats, Oils & Grease (FOG) Application** (see **Figures 12, 13 & 14**) with the appropriate grease interceptor design to the Murfreesboro Water & Sewer Department for approval prior to construction .
2. The design shall be of a size sufficient to provide a minimum of 30 minutes retention time at peak flow rates, and shall capture all oil and grease in excess of 300 mg/L, but **in no case shall be less than 1000 gallons**.
3. A **sampling pit** of a design approved by the Director shall be provided immediately downstream of the grease trap.
4. The temperature of water discharged to the grease trap shall not exceed 140 degrees Fahrenheit at the point of entry.
5. Grease traps shall be pumped whenever the combined depth of the settled and floating materials equals 25% of the total depth to overflow, but in no case shall be less than once per calendar year by a service contractor qualified to perform such cleaning.
6. The use of emulsifiers to reduce grease capture in grease traps is not permissible.
7. A record of all pumpage of the grease traps shall be kept on file at the site and shall be accessible to City inspectors during normal business hours. Such records shall include the dates, quantities pumped and the identity of the person or business that conducted the

pumping. By ordinance, MWSD may require such records to be submitted directly to the department.

### **3.2 Reduction in Charges for Water Excluded from Sewerage System**

(a) In the event that it is established to the satisfaction of the department that all or a portion of the water consumed does not and cannot enter the public sanitary sewerage system, then such water not reaching the system may be excluded from the computation of the charge for sewerage service. In such event the department shall require the installation of an additional meter at the customer's or interested party's expense in such a manner as to measure the quantity of water actually excluded from the public sanitary sewerage system. All outlets for such water shall be consolidated and measured by one single meter at a location satisfactory to the department. All repairs thereto shall be made at the expense of the owner or interested party.

(b) Eligibility.

- (1) Customers are eligible for the adjustment of their monthly sewer charges in only the following circumstances:
  - a. The average amount of water diverted by an industry equals a minimum of fifteen thousand (15,000) cubic feet per month for a twelve (12) month period; or,
  - b. The customer is a municipal golf course; or,
  - c. Customers are eligible for the adjustment of monthly sewer charges in only the following circumstances: The customer is a residential or commercial customer who uses extra water for lawn or garden irrigation purposes and satisfies the requirements herein. The reduction period will be only for the months of April, May, June, July, August, September and October. If the consumption for a said month exceeds one hundred twenty percent (120%) of the monthly winter average calculated by averaging the months of November through March less the high and the low months, the customer shall not be charged sewer charges on the excess. If the customer does not have a consumption for winter average calculation as set forth above herein, the consumption average for the customer's category plus twenty percent (20%) shall be used and nine hundred (900) cubic feet shall be used as an average for residential applicants; or
  - d. The commercial or residential customer has and utilizes a separate water meter for their irrigation system.
  - e. Any "water only" customer who has public sewer available (within two hundred (200) feet of the property line) shall be entitled to the credit provided in *c.* above during only the months of June, July, August and September.

For the purpose of this section, "commercial" is defined as nonresidential, except for multifamily, and non-industrial business enterprises.

(c) In the event that the department finds it is not practical to measure the flow of diverted water, the director, at its discretion, approve some other manner of computing or estimating the amount of water diverted from the public sanitary sewerage system.

(d) Customers requesting consideration from a reduction in sewerage service charges because of water excluded from the public sanitary sewerage system shall make written application to the department for such consideration, giving their name, address, account number and supporting data fully describing all sources of water, as well as the disposition of water alleged not to be entering the public sanitary sewerage system. The application shall be accompanied by a sketch to approximate scale showing the plan of the property, water distribution system, sewer, layout, points of connection to the sewer system, existing meters and proposed meter and the scheme proposed for determining the quantity of water entering the public sanitary sewerage system and that flow excluded from the sanitary sewerage system.

(e) In the event the customer modifies the system without the prior written consent and approval of the department, the department may in its discretion permanently terminate the customer's right to the exclusion provided for in this section 33-51. In like manner, if the department determines that the customer has tampered with the meters or bypassed the meters, or in any way abused the right granted under this section, the department may in its discretion permanently terminate the customer's right for a reduction in charges provided for in this section 33-51.

(f) By making such application the applicant hereby consents to the City making inspections without prior notice.

### ***3.3 Payment of Monthly Charges by Customers Accessible to Sanitary Sewer***

The definition of Accessible Sewer in Section 16-28 of the City Code is “ A public sanitary sewer located in a street, alley, right of way, easement or other public property abutting on the property in question.” Prior to June 28, 2005, the definition was a sanitary sewer abutting on the property in question or otherwise within 200 feet of any boundary.

Section 33-1 of the City Code requires the payment of monthly sewage services charges for property that is accessible to sanitary sewer regardless of whether or not the property is actually connected to the sanitary sewer.

From Department records it cannot be determined whether a property is actually connected to the sanitary sewer only that monthly sewage services charges are paid.

When a customer is identified that is 200 feet from and is not connected to the sanitary sewer and is paying monthly sewage services charges the charges will be discontinued unless the property meets the definition for accessible sewer per Ordinance 05-O-48. The customer will not receive retroactive reimbursement for monthly sewer charges paid prior the billing period in which the customer is identified as eligible for discontinuing monthly sewer charges.

## **3.4 Department's Authority for Regulating Cross Connections**

### **3.4.1 Tennessee Laws and Regulations**

The Tennessee Code Annotated, Chapter 68: Health, Safety and Environmental Programs, Chapter 221: Water and Sewerage, places the major responsibility on the waterworks system for supplying a safe water to the customers and controlling cross-connection hazards. This law specifically prohibits the Department from installing or maintaining a water service connection to a customer where cross-connections or backflow hazards exist or have potential to exist. The Regulations for Public Water Systems and Drinking Water Quality (Tennessee Department of Environment and Conservation, Division of Water Supply, Chapter 1200-5-1) require all public water suppliers have an ongoing Cross Connection Control Program. This program must include provisions for: public relations; routine on-site inspections; enforcement; installation, testing, and repair; and records maintenance. As the State of Tennessee does not have a state plumbing code, local authorities must adopt legislation which authorizes cross-connection control activities. Pursuant to this State legislation, the City of Murfreesboro has established an ordinance dealing with cross-connection policy.

### **3.4.2 Murfreesboro City Code (Sections 33-18 through 33-22)**

Amendments to the Murfreesboro City Code dealing with cross connection control were approved by the City Council on April 1, 1993. This established Sections 33-18 through 33-22 which provide for implementation and operation of a program to effectively control cross-connection hazards. This ordinance specifically prohibits cross-connections and makes provisions regarding policy and operational aspects of the program. The ordinance took effect fifteen (15) days after its passage. The Murfreesboro Water and Sewer Department is responsible for the enforcement of this ordinance and has developed the following policies and guidelines for the implementation and maintenance of the program. Any discrepancies between this policy and the City Code sections cited above are superseded by the City Code.

## **3.5 Murfreesboro Cross Connection Program Policies**

### **3.5.1 Plumbing Permits**

A plumbing permit shall be required for the installation of any backflow prevention device. Permits will not be issued for any plumbing work unless the required backflow prevention device is included on the permit. Proof of valid State cross-connection control certification shall be required prior to the issuance of a permit. The cost of a plumbing permit is \$10.00, plus \$2.50 for each device to be installed. At the time of permit issuance, the permittee should receive the following information:

- Minimum Acceptable Installation Criteria for Backflow Prevention Devices  
The Murfreesboro Water and Sewer Department has developed criteria for the installation of backflow prevention devices including drawings of typical installations. Copies may be obtained from the Codes Department when application is made for plumbing permits, or from the Water and Sewer Department offices.
- List of Currently Approved Backflow Prevention Devices

Only devices approved by the Foundation for Cross-Connection Control and the Tennessee Department of Environment and Conservation may be used for the control of cross-connection hazards. Information regarding any newly approved devices is available from the State Division of Water Supply.

- Installation and Maintenance Tag for Backflow Prevention Devices

Any person installing, repairing, or testing any backflow prevention device shall, upon completion of the work, affix an "Installation and Maintenance Tag" upon the device. The person doing the actual work upon the device shall fill in the information requested on the tag in entirety. These tags (bright yellow in color) are available from the Codes Department when application is made for plumbing permits, or from the Water and Sewer Department offices.

### **3.5.2 Backflow Device Installation**

The installation of any backflow prevention device shall be performed by a person with backflow prevention certification accepted by the Tennessee Department of Environment and Conservation, Division of Water Supply, and shall conform to all minimum acceptable installation criteria as set forth by the policy of the Murfreesboro Water and Sewer Department and City Code Sections 33-18 through 33-22.

### **3.5.3 Plumbing Inspections**

Final approval by the City for new plumbing systems and additions to existing systems shall not be given prior to completion of a cross-connection inspection and acceptable installation of any necessary backflow prevention devices. The Cross Connection Control Inspector shall inspect all newly installed and/ or repaired devices. No devices will be inspected or approved unless a completed "Installation and Maintenance Tag" (bright yellow) is affixed to the device. If the tag is present, the inspector will then inspect and test the device and remove the yellow tag for his records. The inspector will then attach either a light blue "approved" tag or a red "rejected" tag. If any device is rejected, the inspector will notify the person identified on the yellow tag. The City plumbing inspector shall not grant final approval if the device is rejected or no tag is present.

### **3.5.4 Periodic Cross-Connection Inspections**

Periodic inspections are conducted at all premises where cross-connection hazards are deemed possible. Department personnel shall have the right to inspect premises and test backflow prevention devices whenever deemed necessary. Water service will not be disrupted without the knowledge of the customer.

### **3.5.5 Inspection Fees**

Fees are not assessed for any initial or routine annual testing of backflow prevention devices. A notice is issued for devices failing initial or annual tests, and a thirty (30) day grace period is allowed for repair. If the deficiency is not corrected during this period, a fee of twenty five dollars (\$25.00) is assessed. The fee is re-assessed for each subsequent visit after the thirty day period. Fees are included on the customer's monthly water bill.

### 3.5.6 Testing & Repair

In addition to installation, all testing and/or repair of backflow prevention devices shall be performed by a person with backflow prevention certification accepted by the Tennessee Department of Environment and Conservation, Division of Water Supply. Records of testing and repair must be provided to the Murfreesboro Water and Sewer Department. Testing of backflow prevention devices will be performed at least on an annual basis.

### 3.5.7 Certification

Valid backflow prevention certification is required to install, test or repair backflow prevention devices in the City of Murfreesboro. Proof of certification (a photocopy of the certificate) shall be filed with the Department prior to commencing any of the above mentioned work. Any backflow protection certification issued by an organization other than those listed below shall be accepted on a case-by-case basis as approved by the Department. Without certification, fire prevention system contractors must be approved by the Department to install any backflow prevention device, and then may install devices only on fire systems. The following organizations can provide information on certification:

Fleming Environmental Training Center  
2022 Blanton Drive  
Murfreesboro, Tennessee 37129-2912  
Phone: (615) 848-3225

TN Assoc. of Utility Districts (TAUD)  
PO Box 2529  
Murfreesboro, Tennessee 37133-2529  
Phone: (615) 896-9022

### 3.5.8 Internal Protection

In conjunction with the main line backflow protection device(s), internal protection of the potable water may be required. Internal protection is utilized to prevent contamination of potable water after it has entered the customer's piping system. In such cases, additional backflow prevention devices are necessary to isolate specific areas or sources of potential contamination. {§33-19,f,5}

### 3.5.9 Statement - Wells

Any premises having an additional source of water other than that supplied by the Murfreesboro Water and Sewer Department (such as a well) must supply a statement attesting that no cross-connections exist on the premises. Such statement must include the location of all additional water sources utilized on the premises. Maximum backflow protection is required on all public water sources supplied to the premises.

### 3.5.10 Fire Protection Systems

The Murfreesboro Water and Sewer Department has adopted the American Water Works Association classification scheme (Manual M-14) for backflow protection on fire prevention systems. This scheme classifies fire systems into six classes based on water source and arrangement of supplies. The type of backflow protection necessary for the premises is determined by the classification of the fire system. Minimum acceptable backflow protection on fire systems in the City of Murfreesboro is a double check detector assembly. Only licensed sprinkler contractors may install or repair backflow prevention devices on fire protection systems.

All existing fire systems are required to upgrade to current ordinance requirements. The Department is in the process of identifying facilities with fire systems. Those with the highest potential hazard will be required to upgrade their systems until all are corrected. Any facility obtaining a building permit for any purpose is required to immediately upgrade the fire system regardless of hazard.

### 3.5.11 Underground Device Installation

Underground installation of backflow prevention devices is not permitted except as described in the Installation Criteria. Existing facilities with devices installed in underground pits or vaults must maintain an approved Confined Space Entry Program. The facility must agree to supply the necessary equipment and manpower to provide Department personnel safe entry into permit-required confined spaces as required by OSHA regulations (29 CFR 1910.146). Below-ground devices must be upgraded to current requirements during any facility expansion or renovation that requires a plumbing permit.

### 3.5.12 Outdoor Enclosures For Backflow Prevention Devices

Protective enclosures are required for outdoor devices. Such enclosures must meet ASSE Standard #1060 - *Performance Requirements for Outdoor Enclosures for Backflow Prevention Assemblies*. Issued in November 1996 by the American Society of Sanitary Engineering for Plumbing and Sanitary Research, this standard “details the requirements of and outside enclosure for various types of backflow prevention assemblies. It includes enclosure types for freezing and non-freezing locations.”

### 3.5.13 Irrigation Systems

All irrigation systems (residential or otherwise) require the maximum protection of a reduced pressure backflow prevention device which must be installed, inspected, and tested according to established procedures. Devices installed outdoors must be protected with a weatherproof, insulated enclosure. In cases where the device is physically removed during cold weather, no enclosure is required but the feed line must be drained and capped. All outdoor installations require a four (4") thick concrete pad to anchor the device. At the customer's request, a separate irrigation water meter may be set by the Department. There will be no sewer charges for such meters but normal tap fees and minimum bill will be assessed.

### 3.5.14 Repurified Water

- (a) All persons requesting use of repurified water shall submit a **Repurified Water Service Application** (see **Figure 15**) and execute a **Repurified Water Customer Agreement** (see **Figure 16**).
- (b) All persons using repurified water produced by the City shall comply with all relevant provisions of City ordinances and MWSD policies and standards relating to potable water, repurified water and sewerage systems of the City.
- (c) Repurified water shall be utilized for irrigation and may be utilized for other approved uses as established by policies adopted by MWSD. The use of potable water by customers of MWSD for irrigation shall be discontinued within ninety days of repurified water becoming available. Available shall mean that a repurified water distribution line is located in a street, alley,

right-of-way, easement or other public property abutting on the property in question.

- (d) All lines and appurtenances dedicated to public use shall be located in public right-of ways or easements approved by the City. Such lines and appurtenances and easements shall become the property of the MWSD, and shall be maintained by MWSD. The construction of all repurified water lines shall be in accordance with the requirements, specifications and policies of the City.

### **3.6 Leak Adjustment Policy**

The Murfreesboro Water & Sewer Department collects the average water and sewer bill and all of the water charges in excess of the average and may drop the sewer charges in excess of the average. Average to be determined by previous three months of normal registration.

The policy applies to leaking commodes or fixtures, underground leaks, hidden leaks, frozen or burst pipes on the customer's side of the meter.

In the event the leak extends into a second billing period, an adjustment can be made on the billing for two consecutive months.

One adjustment per 12 consecutive month period may be allowed for sewer charges in excess of the average sewer charges for water used to fill swimming pools.

There shall be no adjustment for lawn watering or irrigation other than as allowed by Section 33-51 of the Murfreesboro City Code.

A written request must be made to the Customer Services Manager for each adjustment stating the necessary information for a determination to be made. Forms are to be furnished by the Department. If it is determined that a form was falsified, charges will be reinstated.

In the event a customer has only water service (sewer not available to property) an adjustment is not permissible.

If the bill is equal to, or greater than, ten (10) times the normal bill, it shall be deemed a catastrophic leak. The normal bill shall be the average of the previous twelve months of normal registration. Water charges in excess of the average shall be reduced by fifty percent (50%). Sewer charges in excess of the average of the previous three months of normal registration shall be dropped.

### **3.7 Fire Hydrant Meter Policy**

#### **3.7.1 General**

The Water and Sewer Department makes available special meters and hoses for use on fire hydrants for unusual, high volume water needs, e.g. filling swimming pools, construction, irrigation etc. They are available on first come first serve basis. There is no guarantee that a meter and/or hoses will be available when requested. The user is responsible for all damages to

the meter, fire hydrant, hoses, water system, or private property that may result from the use of the meter and/or the flow and pressure of the water discharge. The user is also responsible for protecting the public water supply from cross connection by practicing proper cross connection controls.

Uses are classified as day use or long term. Long term is more than one day but no more than 365 days.

Request for day use shall be directed to the Operations and Maintenance (O&M) Department by calling 893-1223. A request for a long-term meter use should be made to the Customer Service Department at 615-848-3209 between the hours of 8:00 a.m. and 4:30 p.m., Monday-Friday.

The Customer Service Representative will call O&M to determine the availability of a meter for long-term use.

For long-term use meters a Department Customer Service Representative will complete a Fire Hydrant Metering and Hose Record form and fax or email it to O&M. A \$1,500 cash deposit will be collected at Customer Service for long-term use. A deposit is not required for day use.

### **3.7.2 Day Use**

Operations & Maintenance Department personnel will deliver and pick up meters for the requested, date, time and location. The customer must sign the Fire Hydrant Metering and Hose Record as acknowledging receiving the meter and hose.

Hoses will be delivered upon request.

All hoses must be rolled up and cleaned before returning.

A \$40.00 charge will apply for meters delivered and returned between normal working hours of 7:00 a.m. and 4:30 p.m., Monday-Friday.

A \$55.00 charge will apply for any meter delivered or picked up before or after regular working hours, including weekends and holidays.

All day use meters shall be returned before 9:00 p.m. No meter shall be kept over night.

Once the applicant is finished with the meter, they will contact O&M by calling 893-1223 for the meter to be picked up. At the time of the pickup, the meter will be inspected for any damage. The applicant will sign the inspection form acknowledging the meter was returned without damage or noting any damage to the meter.

A copy of the completed inspection form will be faxed to Customer Service along with the meter reading for billing for the water usage and applicable fees. Customer Service will prepare an invoice for water used. Net Payment is due within 14 days. A 10% charge shall apply for payments after the due date.

### **3.7.3 Long-Term**

Fire Hydrant meters may be requested for long-term usage by contractors who need meters at different locations throughout the year. The meter will be delivered by the Department to the initial use site requested by the contractor. The contractor will be responsible thereafter for moving the meter from site to site. The following shall apply:

All meters will be returned to Operations & Maintenance Department for reading and inspection every 90 days.

All meters shall be returned and deposits refunded at least once per year to comply with state unclaimed property regulations. Another meter may be reissued to the contractor after completing the Fire Hydrant Metering and Hose Record form for the new meter and a new deposit is collected. Deposits must be refunded each calendar year when the meter is returned to comply with state regulations and for audit purposes.

All meters must be returned to the Operation and Maintenance facility at 1725 South Church Street the last week of June of each year. Meters will be inspected and registers read for the purpose of closing out the Department fiscal year, which ends June 30. A statement will be sent to the customer for actual water used or a minimum use. All applicable city ordinances will apply for the collection of funds due.

All cost for repairs to damaged meters shall be deducted from the deposit. The deposit shall be forfeited in total for lost or unaccounted meters. Otherwise deposits will be refunded within 30 days.

## **3.8 Operations & Maintenance Policy, Sewer**

### **3.8.1 Open Public Sanitary Sewer Service Line**

Section 33-36 of the Murfreesboro City Code prohibits the discharge of any storm water, surface water, ground water, roof runoff, subsurface drainage, cooling water, or unpolluted industrial process water, mud, sand or any solid capable of causing obstruction of flow in any sanitary sewer. Any person violating this ordinance will be responded to in accordance with City Code which may include charges of an offense and associated fines or civil penalties. Each day in which any separate violation continues shall be deemed a separate offense.

When connecting a new home or property to the public sanitary sewer the plumbing contractor excavates the building sewer trench and installs the building sewer to within three feet of the point of connection with the public sewer. However the building sewer is not connected by Department personnel until it is inspected and approved by the City. During this activity the cap or plug to the public sanitary sewer service line is sometimes removed by the plumbing contractor. If the public sewer service line is left open, there is a potential for debris, gravel, mud, storm water, surface water, or ground water to enter into the public sewer in violation of Section 33-36 of the Murfreesboro City Code.”

When a duly authorized employee of the City of Murfreesboro and/or the Murfreesboro Water and Sewer Department finds a public sanitary sewer service line unplugged, the Director of the Murfreesboro Water and Sewer Department or Director's designee shall issue a Notice of Violation to the customer of record and request the public sanitary sewer service line be plugged or capped within 24 hours of the Notice of Violation. The Notice of Violation shall be posted on the job site.

If the public sanitary sewer service is not made water tight by being capped or plugged within 24 hours of the Notice of Violation, employees of the Murfreesboro Water and Sewer Department will install a water tight cap or plug in the public sanitary sewer service line and charge the customer of record \$50.00 in addition to any applicable fines.

### **3.8.2 Connection to the Public Sanitary Sewer and Installation of Sewer Cleanout**

Public sanitary sewer service lines are extended by the developer of a subdivision to each lot. Normally the public sanitary sewer service line is terminated at the right-of-way which is normally seven feet behind the proposed curb. In some cases, the public sanitary sewer service line has been installed beyond the public right-of-way and onto private property. In order to locate the sanitary sewer service line and cleanout as close as possible to the edge of the right-of-way, the public sanitary sewer service line should be terminated approximately five feet from the back of the curb or two feet from the edge of the right-of-way. This will allow location of the cleanout within seven to ten feet from the back of the curb and beyond proposed sidewalks.

If the public sanitary sewer service line has been constructed by the public sanitary sewer contractor closer than five feet from the curb, the plumbing contractor for the building sewer shall cut and remove the excess public sanitary sewer service line to within five feet from the curb. The plumbing contractor shall place a water tight cap on or insert a plug in the public sanitary sewer service line to protect from debris, gravel, mud, and storm water from entering into the public sanitary sewer service line until such time the building sewer is connected to the public sewer service line.

Upon inspection and receiving the appropriate approval for connection from the City Building and Codes Department or the Murfreesboro Water & Sewer Department, a sanitary sewer cleanout will be installed and the final connection made to the public sewer by employees of the Murfreesboro Water and Sewer Department Operation and Maintenance Division.

After inspection and approval by representatives of the Murfreesboro Water & Sewer Department or the Building and Codes Department, representatives of the Water and Sewer Department may refuse to connect the building sewer if it does not meet the requirements of Section 33-35 Building Sewer Connections of the Murfreesboro City Code. In instances where the Building and Codes Department are overseeing the plumbing inspection and the Murfreesboro Water & Sewer Department has refused to make the building sewer connection, Building and Codes will be notified of the deficiencies that must be corrected in order to make the final connection.

### **3.8.3 Sewer & Water Line Inspections and Sewer Line Connections by MWSD**

1. Codes dept. faxes list of lots/properties that have called in for initial inspection of sewer line and water service line to the Operations & Maintenance (O&M) division, (Permit should have already been issued.) No requests directly from contractors will be accepted. In case of inspections for existing residences, Codes will notify O&M by phone.
2. Q&M service crew inspects sewer line from house to sewer lateral and either approves or fails line. (Tap fees must have already been paid.) Also, at this time the water line will be inspected.\*
3. O&M notifies contractor by either phone or fax if additional work is needed to pass inspection.
4. If sewer service is approved, cleanout will be installed at the time of inspection.
5. Contractor must call O&M to request sewer cleanout box after backfilling around cleanout.
6. Contractor must call O&M to request final inspection of the water' meter box and sewer cleanout box after yard work is completed. Cleanout boxes and meter boxes must be at finished grade before requesting a final inspection.
7. If final inspection of the water meter box and the sewer cleanout box are acceptable, O&M will notify Codes dept. that Certificate of Occupancy can be issued.\*\* If water meter box and sewer cleanout box are not satisfactory, the Department will request a "hold" be placed on the Certificate of Occupancy or a bond put in place for the remaining work to be done.

#### **DEEP EXCAVATIONS FOR CLEANOUT INSTALLATION**

8. City employees will not enter a trench without sloping and benching or trench box protective systems in place for protection from cave-ins. It will be the responsibility of the builder or his subcontractor to provide adequate sloping and benching or trench box protective systems so that trenches excavated for clean-outs meet OSHA standards for Construction Industry Subpart P.
9. After the plumbing permit holder performs the additional work to bring the trench into conformance with OSHA Standards for Construction Industry Subpart P., the permit holder shall call for a re-scheduled installation of the cleanout by City employees.
10. When an excavated trench is deeper than six (6) feet and meets the requirements of Subpart P, MWSD O&M designated staff shall inspect and supervise the builder and/or the builder's subcontractors in installation of the sewer cleanout.
11. An appointment may be scheduled by calling MWSD's Operations and Maintenance facility. The work will be scheduled as soon as possible and on a first come first served basis. Appointments for inspections of a cleanout installation by the permit holder will be given priority over new requests for cleanout installation.
12. City employees will continue to install cleanouts in trenches that meet OSHA Standards for Construction Industry Subpart P.

#### **NOTES:**

\*Water and sewer lines will be inspected at the same, time.

\*\*If for some reason, i.e., inclement weather during winter months, the yard work cannot be completed, a conditional Certificate of Occupancy will be issued contingent upon completion of yard work.

### **3.9 Sewerage System Improvements for Development**

Developers shall bear the entire costs of all sanitary sewer lines through eight inch (“collectors”) in diameter and any sanitary sewers larger than eight inches (“interceptors”) that are required to solely service a particular subdivision or development, and manholes, appurtenances, and house service lines to each lot for all subdivisions and developments connected to the Murfreesboro sewerage system.

The costs of interceptor sewers and/or sewerage facilities required to extend the city sewerage system to a particular subdivision or development, and costs of interceptor sewers and/or sewerage facilities within a development shall be shared between the developer and the City when the lines and/or facilities are upsized for future growth in accordance with the Master Plan for Water and Sewer Facilities, or as upsized by the Water and Sewer Department. The developer’s portion of the costs shall be an amount up to the cost of the required lines and/or facilities sized to solely serve the development. An eight-inch sewer line is the minimum size public sewer line allowed by the Tennessee Department of Environment and Conservation.

The costs equivalent for the required size sewer line to be paid by the developer shall be determined by the Water and Sewer Department based on a per foot price calculated from historical cost information accumulated by the department for sanitary sewers and appurtenances. The amount paid by the developer shall be equal to the per foot price of the size sewer required for the development, times the actual lineal footage of interceptor sewer installed. Other project costs such as easements, land appraisals, surveys and permits shall be shared on a percentage basis calculated by dividing the developers share as determined above by the actual construction cost of the larger interceptor sewer.

If an area served does not require an interceptor sewer larger than eight inches in diameter, the entire costs of such line to a subdivision or development shall be at the expense of the developer.

If a particular development requires a line larger than eight inches to solely serve the development, the entire cost of the larger line shall be at the developer’s expense.

In the event the calculated costs equivalent of the required size sewer line to be paid by the developer is greater than the actual costs of a larger interceptor, the department may adjust the required size sewer equivalent costs based on a revised per foot price adjusted for conditions such as depth of excavation, rock, material costs, etc., which may effect interceptor costs.

Interceptors and collector lines within a subdivision or development shall be extended to the outer boundary of the subdivision and interceptors and collectors along road frontages shall be extended the entire length of the road frontage to the limits of the development, to minimize problems of future extension in a developed subdivision. In all cases, sewer lines shall be extended to the limits of pavement.

For sewerage facilities such as pumping stations and force mains extended for a particular subdivision and sized larger by the Water and Sewer Department, in accordance with the master plan or as set by the department, the developer shall pay an amount equal to an equivalent costs of facilities sized to solely serve the proposed development or subdivision. This amount shall be based on a percentage of actual project costs of the larger facilities. The percentage shall be calculated by dividing the estimated costs of sewerage facilities to solely serve the subdivision by the estimated costs of the upsized facilities to serve a large area. The percentage shall be applied to the actual project costs to determine the contribution by the developer. Project costs shall include engineering, easements, appraisals, tap fees, permits and construction costs. For pumping stations and force mains required to solely serve a particular development, the developer shall bear the entire project costs for such facilities.

Notwithstanding the above, the department, with the approval of the City Council, may negotiate with a developer the level of contribution toward upsized facilities if it appears to be in the best interest of the city. The level of participation would be set based on the merit of each project and the benefit to the city gained by funding a larger portion of a project.

Notwithstanding anything to the contrary above, neither the City nor the Water and Sewer Department shall be obligated to participate in funding any portion of a sewer extension if it does not appear to be in the best interest of the City, or if City funds are not available. Nor shall the department be obligated to fund any portion of a sewer line extension outside the city limits.

**Developers shall be required to Contract with the City and provide an amendment to the Contract insuring the equitable participating amount for their share of the costs for all interceptor sewers and sewerage facilities prior to the city proceeding with design, bidding, and construction. The Contract and Amendment with the developer must be approved by the Water and Sewer Board and the City Council.**

The Water and Sewer Department shall invoice a developer for the development share of interceptor sewers and sewerage facilities as the costs are incurred by the department.

### ***3.10 Disputed Bill or Action Policy***

- a) Any customer who disputes the accuracy of his bill or any action of the water and sewer department under the terms and provisions of this article shall be entitled to review of the bill or action, provided the request for a hearing is made on or before the due date of the disputed bill.
- b) Hearings on disputed bills or actions of the department under this article will be held by appointment at the offices of the water and sewer department between the hours of 8:30 a.m. and 4:30 p.m. any business day.
- c) A customer requesting a hearing has the right to examine the records of water and sewer department pertaining to that customer's service.
- d) A customer requesting a hearing has the right to have a representative at the hearing, to testify and to present witnesses.

- e) Hearings will be conducted by the Director's designee. The Director's designee will hear the evidence and render a decision.
- f) If the customer believes the decision of the counselor is in error and requests an appeal hearing in writing by noon of the third business day next following, or if the counselor desires to refer the matter to a higher level, a hearing will be conducted by the director of the water and sewer department. The director will hear the evidence and render a decision. If the customer is still not satisfied with the decision, the customer may appear before the board of the water and sewer department at a regular monthly board meeting, who will hear the evidence and render a final decision, provided a written appeal is filed by noon of the third business day next following.
- g) The customer's service will not be terminated until an appropriate decision is reached.
- h) The customer has the right to a post termination of service hearing under the above procedures if there was no hearing before termination, if the customer requests such post termination of service hearing by noon of the third business day following such termination.
- i) A copy of the above hearing appeal procedures will be posted in the office of the water and sewer department at the immediate location where customers pay bills.



# Murfreesboro Water and Sewer Department

300 NW Broad Street • P.O. Box 1477 • Murfreesboro, Tennessee 37133-1477 • phone: 615-890-0862 • fax: 615-896-4259

## APPLICATION FOR INDUSTRIAL DISCHARGE PERMIT

### SECTION A - GENERAL INFORMATION

**A-1. Business Name:** \_\_\_\_\_

*Provide the official or legal name of the business*

**A-2. Owner Name:** \_\_\_\_\_

*Provide the name of the person, firm, or organization that legally owns the facility*

**A-3. Operator Name:** \_\_\_\_\_

*If the business operator is not the owner, provide the address of both and submit a copy of the contract and/or other documents indicating the operator's scope of responsibility for the business*

**A-4. Facility Address**

**Inside the City Limits?: Yes / No**

*Provide the physical location of the facility to be permitted*

Street: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_

Zip

:

**A-5. Business Mailing Address**

*Provide the address where day-to-day correspondence will be mailed*

Street: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_

Zip

:

**A-6. Designated Signatory Authority**

*Attach similar information for each representative authorized to sign official documents for the facility*

Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Title: \_\_\_\_\_

**A-7. Designated Facility Contact**

*For regular day-to-day business*

Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Title: \_\_\_\_\_



**B-3. Standard Industrial Classification Code (SIC)**

*Include the number and description of all codes that apply to your facility. List in descending order of importance.*

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_

**B-4. Production Volume**

*List the products manufactured by your facility. Give both the common and brand name and the proper or scientific name. Enter the amounts produced and the units of production*

Product	Previous Calendar Year		Present Calendar Year	
	Average	Maximum	Average	Maximum

**SECTION C - WATER SUPPLY**

**C-1. Water Sources**

*Indicate all that apply*

- Private well       Surface water       Murfreesboro Water Department
- Storage tank (volume & type) \_\_\_\_\_
- Other source (explain) \_\_\_\_\_

**C-2. Water Bill Information**

Name \_\_\_\_\_ Phone: \_\_\_\_\_  
 : \_\_\_\_\_  
 Street \_\_\_\_\_  
 : \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

**C-3. Water Service Account Number:**

\_\_\_\_\_

**C-4. Water Usage**

Provide average usage in gallons per day and indicate whether the volume is measured [M] or estimated [E]

	Type of Use	Average Volume Used	Units (gals, cu.ft., etc.)	M	E
a.	Contact cooling				
b.	Non-contact cooling				
c.	Boiler feed				
d.	Process				
e.	Sanitary				
f.	Air pollution control				
g.	Contained in product				
h.	Washdown				
i.	Irrigation				
j.	Other				

**SECTION D - SEWER INFORMATION**

**D-1. (a) Existing Business**

Is the facility presently connected to the public sewer system?  YES  NO

**(b) New Business**

Will your facility be occupying an existing building?  YES  NO

Have you applied for a building permit?  YES  NO

Will this facility be connected to the public sewer system?  YES  NO

**D-2. Sewer Connections**

List size, location, and average flow in gallons per day of each connection. Attach others if necessary.

	Size (in.)	Flow (GPD)	Location
#1			
#2			
#3			

**SECTION E - WASTEWATER DISCHARGE INFORMATION**

**E-1. Does this facility discharge waste other than domestic (restroom) into the sewer system?**

Will any wastewater be treated prior to discharge to the public system?  YES  NO

If YES (non-domestic wastes), complete the remainder of the application.  
If NO (domestic wastes only), go to SECTION I of this application.

**E-2. Wastewater Flow**

Indicate the hours, times and volumes that non-domestic wastes are discharged.

Day of Week	Duration of Discharge	Discharge Flow Rates			Hours of Discharge
		Peak Hourly	Maximum Daily	Daily Average	
Mon.					to
Tues.					to
Wed.					to
Thurs.					to
Fri.					to
Sat.					to
Sun.					to

**E-3. Batch Processes**

Complete and attach this information for each batch process. If no batch discharge occurs, go to E-4

#1	Type of process:		Volume (gal):	
	Frequency:		Duration:	
	Flow rate (gpm):		% of total flow:	
#2	Type of process:		Volume (gal):	
	Frequency:		Duration:	
	Flow rate (gpm):		% of total flow:	
#3	Type of process:		Volume (gal):	
	Frequency:		Duration:	
	Flow rate (gpm):		% of total flow:	

**E-4. Schematic Flow Diagram**

Submit a schematic flow diagram for each major activity in which wastewater is generated. Include in each drawing the flow of all materials, products, water, and wastewater from the beginning of the activity to its completion showing all unit processes. Include daily average and maximum flow volumes and indicate if this actual or estimated information. Indicate processes that use water and which generate wastestreams. Number each process and use these numbers to identify the process in the building layout drawing in SECTION H.

***This drawing must be certified by a State Registered Professional Engineer.***

**E-5. Non-Categorical Users**

*If you selected any category in question B-1, go to question E-6. Otherwise, provide information for each facility process. Include the process reference number from your schematic, process name, flows in gallons per day, and type of discharge (batch, continuous, or none).*

No.	Process Description	Average Flow	Maximum Flow	Type

**E-6. Categorical Users**

*Provide information for each facility process. Include the process reference number from the schematic, process name, flows in gallons per day, and type of discharge (batch, continuous, or none).*

No.	REGULATED Process Description	Average Flow	Maximum Flow	Type

No.	UNREGULATED Process Description	Average Flow	Maximum Flow	Type

No.	DILUTION Sources	Average Flow	Maximum Flow	Type

**E-7. Categorical Users Subject To Total Toxic Organic (TTO) Requirements**

- a. Does this facility use any toxic organics listed under the TTO standard of the applicable EPA categorical pretreatment standards?  YES  NO
- b. Has a baseline monitoring report (BMR) been submitted which contains TTO information?  YES  NO
- c. Has a toxic organics management plan (TOMP) been developed for this facility?  YES  NO  
If YES, please attach a copy with this document.

**E-8. Flow Metering & Sampling Instrumentation**

*Indicate whether you have or plan to have the following equipment at this facility*

- Monitoring manhole  Existing  Proposed
- Automatic sampling equipment  Existing  Proposed
- Flow metering  Existing  Proposed

*Provide the location and description of any existing equipment:*

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**E-9. Process Changes and Expansions**

*Describe below any process changes or expansions planned within the next three years that may change the characteristics or volume of wastewater discharge.*

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**E-10. Reclamation Systems**

*Indicate if any water or materials recovery processes are utilized.*  YES  NO

*If YES, describe below and submit a flow diagram for each process. Include a description of the process, substances recovered, and spent solution characteristics.*

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**SECTION F - CHARACTERISTICS OF DISCHARGE**

*If renewing a discharge permit, do not complete this section. If applying for a new permit, enter any values from previous wastestream analyses, enter typical values from similar facility, or indicate any parameter that is expected to be present.*

Pollutant	Detection Limit	Units	Maximum Value	Units	Average Value	Units	Number of Analyses
Acenaphthene							
Acrolein							
Acrylonitrile							
Benzene							
Carbon tetrachloride							
Chlorobenzene							
1,2,4-Trichlorobenzene							
Hexachlorobenzene							
1,2-Dichloroethane							
1,1,1-Trichloroethane							
Hexachloroethane							
1,1-Dichloroethane							
1,1,2-Trichloroethane							
1,1,2,2-Tetrachloroethane							
Chloroethane							
Bis (2-chloroethyl) ether							
17 Bis (chloromethyl) ether							
2-Chloroethyl vinyl ether							
2-Chloronaphthalene							
2,4,6-Trichlorophenol							
Parachlorometa cresol							
Chloroform							
2-Chlorophenol							
1,2-Dichlorobenzene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
3,3-Dichlorobenzidine							
1,1-Dichloroethylene							
1,2-Trans-dichloroethylene							

Pollutant	Detection Limit	Units	Maximum Value	Units	Average Value	Units	Number of Analyses
2,4-Dichlorophenol							
1,2-Dichloropropane							
1,2--Dichloropropylene							
1,3-Dichloropropylene							
2,4-Dimethylphenol							
2,4-Dinitrotoluene							
2,6-Dinitrotoluene							
1,2-Diphenylhydrazine							
Ethylbenzene							
Fluoranthene							
4-Chlorophenyl phenyl ether							
4-Bromophenyl phenyl ether							
Bis(2-chloroisopropyl) ether							
Bis(2-chloroethoxy) methane							
Methylene chloride							
Methyl chloride							
Methyl bromide							
Bromoform							
Dichlorobromomethane							
Chlorodibromomethane							
Hexachlorobutadiene							
Hexachlorocyclopentadiene							
Isophorone							
Naphthalene							
Nitrobenzene							
Nitrophenol							
2-Nitrophenol							
4-Nitrophenol							
2,4-Dinitrophenol							
4,6-Dinitro-o-cresol							
N-nitrosodimethylamine							
N-nitrosodiphenylamine							

Pollutant	Detection Limit	Units	Maximum Value	Units	Average Value	Units	Number of Analyses
N-nitrosodi-n-propylamine							
Pentachlorophenol							
Phenol							
Bis(2-ethylhexyl) phthalate							
Butyl benzyl phthalate							
Di-n-butyl phthalate							
Di-n-octyl phthalate							
Diethyl phthalate							
Dimethyl phthalate							
Benzo(a)anthracene							
Benzo(a)pyrene							
3,4-benzofluoranthene							
Benzo(k)fluoranthene							
Chrysene							
Acenaphthylene							
Anthracene							
Benzo(ghi)perylene							
Fluorene							
Phenanthrene							
Dibenzo(a,h)anthracene							
Ideno(1,2,3-cd)pyrene							
Pyrene							
Tetrachloroethylene							
Vinyl chloride							
Aldrin							
Dieldrin							
Chlordane							
4,4'-DDT							
4,4'-DDE							
4,4'-DDD							
Alpha-endosulfan							
Beta-endosulfan							

Pollutant	Detection Limit	Units	Maximum Value	Units	Average Value	Units	Number of Analyses
Endosulfan-sulphate							
Endrin							
Endrin aldehyde							
Heptachlor							
Heptachlor epoxide							
Alpha-BHC							
Beta-BHC							
Gamma-BHC							
Delta-BHC							
PCB-1242							
PCB-1254							
PCB-1221							
PCB-1232							
PCB-1248							
PCB-1260							
PCB-1016							
Toxaphene							
TCDD (Dioxin)							
Asbestos							
Acidity							
Alkalinity							
Bacteria							
BOD5							
COD							
Chloride							
Chlorine							
Fluorine							
Hardness							
Magnesium							
NH3-N							
Oil and Grease							
TSS							

Pollutant	Detection Limit	Units	Maximum Value	Units	Average Value	Units	Number of Analyses
TOC							
Kjeldahl N							
Nitrate N							
Nitrite N							
Organic N							
Orthophosphate P							
Phosphorous							
Sodium							
Specific Conductivity							
Sulphate (SO4)							
Sulfide (S)							
Sulphite (SO3)							
Antimony							
Arsenic							
Barium							
Beryllium							
Cadmium							
Chromium							
Copper							
Cyanide							
Lead							
Mercury							
Molybdenum							
Nickel							
Selenium							
Silver							
Thallium							
Zinc							

**SECTION G - TREATMENT**

**G-1. In-house Treatment**

Does this facility utilize any wastewater treatment equipment or process?  YES  NO

Will any facility wastewater be treated prior to discharge to the public system?  YES  NO

If you answered YES to either question above, complete all of Section G; otherwise go to Section H.

**G-2. Process Types**

*Indicate the type of waste treatment utilized at this facility. Check all that apply.*

- |   |  |
|---|--|
| <input type="checkbox"/> Air Flotation          | <input type="checkbox"/> Ozonation                   |
| <input type="checkbox"/> Centrifuge             | <input type="checkbox"/> Reverse Osmosis             |
| <input type="checkbox"/> Chemical Precipitation | <input type="checkbox"/> Screen                      |
| <input type="checkbox"/> Chlorination           | <input type="checkbox"/> Sedimentation               |
| <input type="checkbox"/> Cyclone                | <input type="checkbox"/> Septic Tank                 |
| <input type="checkbox"/> Filtration             | <input type="checkbox"/> Solvent Separation          |
| <input type="checkbox"/> Flow Equalization      | <input type="checkbox"/> Spill Protection            |
| <input type="checkbox"/> Grease/Oil Separation  | <input type="checkbox"/> Sump                        |
| <input type="checkbox"/> Grease Trap            | <input type="checkbox"/> Biological Treatment        |
| <input type="checkbox"/> Grinding Filter        | <input type="checkbox"/> Rainwater diversion/storage |
| <input type="checkbox"/> Grit Removal           | <input type="checkbox"/> Other Chemical Treatment    |
| <input type="checkbox"/> Ion Exchange           | <input type="checkbox"/> Other Physical Treatment    |
| <input type="checkbox"/> Neutralization         | <input type="checkbox"/> Other Treatment             |

**G-3. Treatment Description and System Diagram**

*Attach a description of each process checked in G-2. Include pollutant loadings, flow rates, design capacity, physical size, and operating procedures. Also, attach a process flow diagram for each existing waste treatment system described. Include process equipment, additives used, by-products, by-product disposal method, and waste and by-product volumes.*

**G-4. Changes in Pretreatment System**

Are any changes or additions in waste treatment planned within three years?  YES  NO

*If YES, attach a description and estimated completion date.*

**G-5. Waste Treatment Operator**

Does this facility have a waste treatment operator?  YES  NO

*If YES, supply the information below.*

Name:

Title: \_\_\_\_\_ Phone: \_\_\_\_\_

Work Schedule: \_\_\_\_\_

**G-6. System Operation Manual**

Is there a manual for the correct operation of the treatment system?  YES  NO

*If YES, attach a copy.*

**G-7. Pretreatment System Maintenance**

Is there a written schedule of maintenance for the treatment equipment?  YES  NO

*If YES, attach a copy.*

**SECTION H - FACILITY OPERATIONAL CHARACTERISTICS**

**H-1. Shift Information**

*If shifts are overlapping or variable, attach an explanation of work schedule.*

Day of Week	Shifts Per Day	Employees Per Shift			Shift Begin & End Times		
		1ST	2ND	3RD	1ST	2ND	3RD
Monday							
Tuesday							
Wednesday							
Thursday							
Friday							
Saturday							
Sunday							

**H-2. Annual Operation**

Indicate type of annual operation. If seasonal or intermittent, describe times of operation below

Business Activity:  Continuous, throughout the year  Seasonal or intermittent

Waste Discharge:  Continuous, throughout the year  Seasonal or intermittent

**H-3. Periodic Shutdown**

Does operation cease during periods of maintenance, vacation, etc.?  YES  NO

*If YES, describe reasons and periods of shutdown below.*

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**H-4. Raw Materials**

*Attach a list of the specific types of raw materials and the amounts (mass or volume per day) used or planned for use and/or storage at the facility.*

**H-5. Chemicals**

*Attach a list of the specific types of chemicals and the amounts (mass or volume per day) used or planned for use and or storage at the facility. Include a Manufacturer's Safety Data Sheet (MSDS) for each compound listed.*

**H-6. Building Layout**

*Attach a scale drawing showing locations of all buildings and structures on the facility premises. Show map orientation and location of water meters, storm sewers, numbered unit processes (see E-4), storage tanks, public sewers, and all facility sewer lines connected to the public sewers. Number each sewer and show existing and proposed sampling locations.*

***This drawing must be certified by a State Registered Professional Engineer.***

**SECTION I - SPILL PREVENTION**

**I-1. Materials Storage**

Does the facility utilize any chemical storage tanks, bins, or ponds?  YES  NO

Are there any underground storage tanks on the premises?  YES  NO

Does all chemical storage have adequate spill containment?  YES  NO

*Attach a description of the location, type, contents, size, containment, refill procedures & times, and frequency & method of cleaning of each tank.*

**I-2. Floor Drains**

Are there any floor drains in production or chemical storage areas?  YES  NO

*If YES, indicate where the floor drains discharge.*

Public sewer  To ground  Storm drain  On-site disposal  Other

**I-3. Spill Prevention Plan**

Does this facility have an accidental spill prevention plan to prevent chemical spills or slug discharges from entering the public disposal system?  YES  NO

*If YES, enclose a copy.*

**SECTION J - OTHER WASTES**

**J-1. Non-Sewered Wastes**

Are any wastes generated that are not disposed of through the public sewer system?  YES  NO

*If YES, describe the waste generated, the quantity, frequency, and disposal method, otherwise go to Section K.*

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**J-2. Waste Disposal**

*Indicate below the name and address of any waste haulers and/or waste receiving facilities utilized by your facility. Identify the waste handled by each separate hauler/facility.*

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**J-3. Permits**

Has or will this facility be issued any Federal, State, or local environmental permits?  YES  NO

*If YES, list permit type and number:*

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**SECTION K - AUTHORIZED SIGNATURES**

**K-1. Compliance Certification**

Will any additional operational and/or maintenance procedures or equipment be necessary to bring this facility into compliance? *If YES, explain below and attach a schedule of milestone activities and estimated completion dates.*

YES     NO

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**K-2. Authorized Representative Statement**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title

\_\_\_\_\_  
Phone

\_\_\_\_\_  
Signature

**FIRE HYDRANT METERING AND HOSE RECORD**

NAME: \_\_\_\_\_

LOCATION FOR HYDRANT CONNECTION: \_\_\_\_\_

BILLING ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_

TELEPHONE NUMBER: \_\_\_\_\_ FAX NUMBER: \_\_\_\_\_

E-MAIL ADDRESS: \_\_\_\_\_

DATE TAKEN OUT: \_\_\_\_\_ DATE RETURNED: \_\_\_\_\_

NUMBER OF HOSES LOANED: \_\_\_\_\_ HOSES USED FOR: \_\_\_\_\_

PERSON REQUESTING: \_\_\_\_\_

DELIVERED AND INSPECTED BY: \_\_\_\_\_

PICKED UP AND INSPECTED BY: \_\_\_\_\_

INSPECTION RESULTS: \_\_\_\_\_

DAMAGES DOCUMENTED BY: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_

**SERVICE CHARGE \$40.00, MONDAY – FRIDAY, 7:00 AM – 4:30 PM  
SERVICE CHARGE \$55.00, WEEKDAYS, HOLIDAYS AND ANYTIME OTHER THAN NORMAL WORKING HOURS.  
CUSTOMERS POSTING A \$1,500.00 DEPOSIT THAT WILL BE BORROWING THE CONNECTION FOR AN INDEFINITE PERIOD OF TIME WILL BE CHARGED A MONTHLY MINIMUM BILL BASED ON THE CURRENT RATE.**

**MURFREESBORO WATER AND SEWER DEPARTMENT CANNOT BE RESPONSIBLE FOR PROPERTY DAMAGE AND OR PERSONAL INJURY WHICH COULD OCCUR DUE TO THE EXTREME PRESSURE AND VOLUME OF WATER WHICH IS PRODUCED THROUGH A FIRE HYDRANT. PERSON BORROWING FIRE HOSE IS RESPONSIBLE FOR ANY DAMAGE DONE TO HOSES OR METER.**

SIGNATURE OF PERSON BORROWING FIRE HOSE: \_\_\_\_\_

METER SERIAL NUMBER: \_\_\_\_\_

METER REMOVED READING: \_\_\_\_\_

METER INSTALLED READING: \_\_\_\_\_









**Equipment on Site**

*(Please circle all that apply and fill in the appropriate information for each piece of equipment.)*

Type	Quantity	Equipment Description (Type, Size, Dimensions, and/or Temperature)
Deep Fryer		
Grill		
Commercial Stove/Oven		
Class 1 Vent Hood		
Steam Cooker		
Steam Table		
Tilting Skillet and/or Kettle		
Countertop Fryer		
Dishwasher		
Wok Stove		
2 Compartment Sink		
3 Compartment Sink		
Conveyor Oven		
Residential Stove/Oven		
Floor Drains		
Hand Sinks		
Floor Sink/Mop Sink		

**NOTE: Food waste and garbage disposals are not permitted in commercial kitchens.**

**Attach a copy of the MENU. Applicable to all establishments that provide a printed, posted or publicized menu.**

I hereby certify that the above information is correct. I am also aware that changes in any of the above information will require a re-application and possible increase in the size or type of grease trap required.

I also agree to have the grease interceptor pumped out by a certified grease trap cleaning company at a frequency that will maintain the grease interceptor/grease trap in a proper operating condition.

This permit is valid only for the specific facility, ownership, processes and operations indicated above. As such, it cannot be sold, transferred or reassigned.

Signature \_\_\_\_\_ Date \_\_\_\_\_

Name (print) \_\_\_\_\_

APPROVAL SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

# GREASE TRAP WITH GREASE SAMPLING BOX

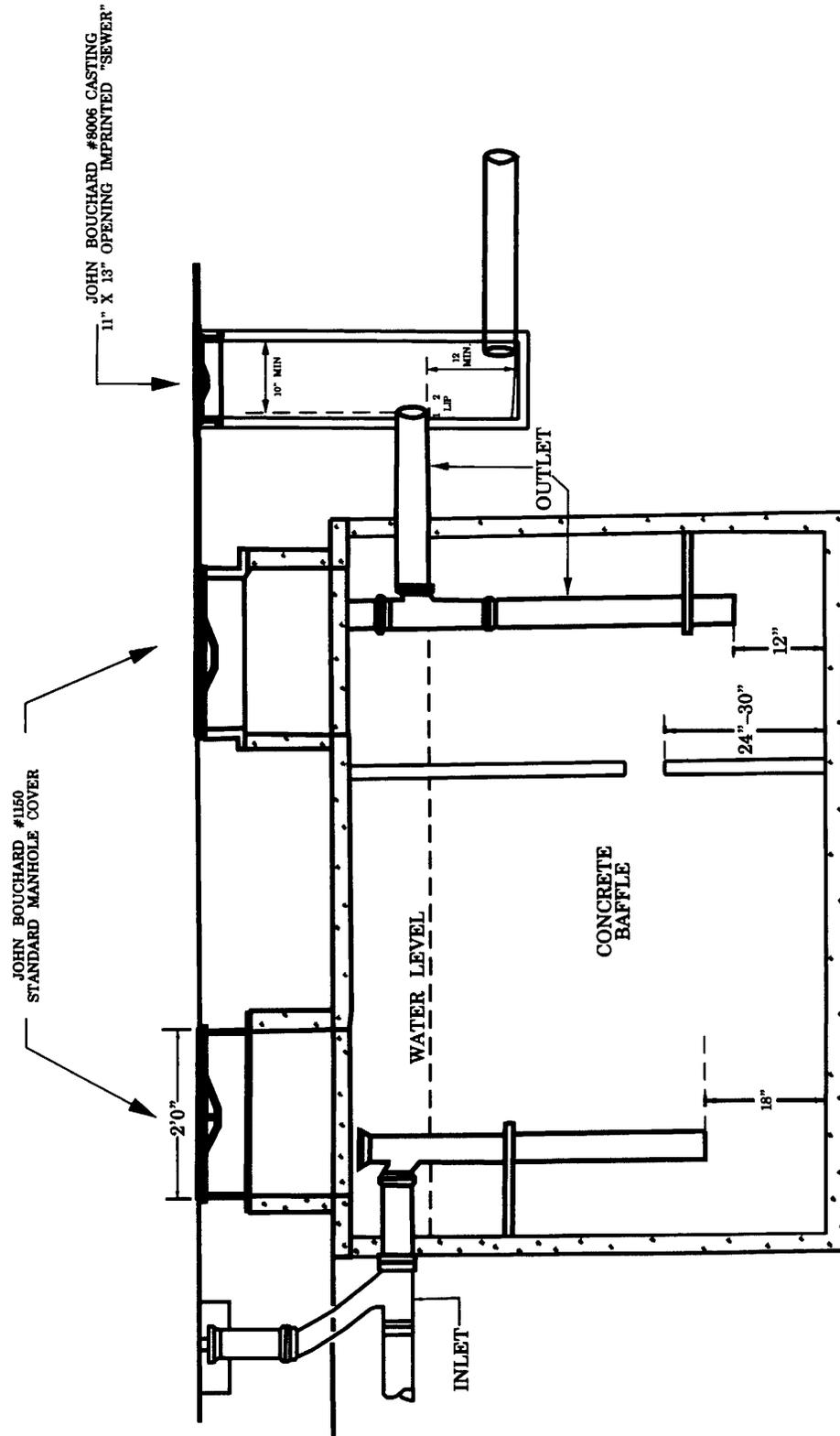


Figure 14.



Figure 15.



# REPURIFIED WATER SERVICE APPLICATION

Murfreesboro Water and Sewer Department  
 P. O. Box 1477 • Murfreesboro, TN 37133-1477 • (615) 890-0862

CUSTOMER NAME		DATE	OWNER/BILLING		DATE
ADDRESS		HOME PHONE	ADDRESS		HOME PHONE
CITY/STATE	ZIP CODE	WORK PHONE	CITY/STATE	ZIP CODE	WORK PHONE
FAX/E-MAIL ADDRESS OF CUSTOMER			FAX/E-MAIL ADDRESS OF OWNER		

SITE INFORMATION – ATTACH SITE PLAN					
LOCATION	ADDRESS	LOT NO.	TRACT/SUBDIVISION	CITY	ZIP CODE
METER TO BE INSTALLED	SIZE/GPM	NO. OF METERS	ASSESSORS PARCEL NO.		
Type of repurified water system: <input type="checkbox"/> Conversion of Existing System <input type="checkbox"/> New System					
USE	<input type="checkbox"/> Residential		<input type="checkbox"/> Commercial		
	<input type="checkbox"/> Other Use (Specify):				
PLUMBER/CONTRACTOR	NAME			PHONE NO.	
	ADDRESS (CITY, STATE, ZIP)				
USER SUPERVISOR	NAME (only if different than Customer)			PHONE NO.	
	ADDRESS (CITY, STATE, ZIP)				

**APPLICANT SIGNATURE** \_\_\_\_\_ **DATE** \_\_\_\_\_

PLEASE SUBMIT ONE (1) SET OF THE SITE PLAN WITH METER LOCATION MARKED					
MWSD USE ONLY					
<b>INTENDED REPURIFIED WATER USE</b>				<b>CHARGES/CREDITS</b>	
<input type="checkbox"/> Irrigation	Est. Annual Use _____	Peak GPD _____		Stub	_____
<input type="checkbox"/> Construction/Dust Control	Est. Annual Use _____	Peak GPD _____		Meter Connection	_____
<input type="checkbox"/> Cooling Tower	Est. Annual Use _____	Peak GPD _____		Service Initiation Fee	_____
<input type="checkbox"/> Other	Est. Annual Use _____	Peak GPD _____			
<b>OTHER SERVICE PROVIDER</b>				<b>CROSS-CONNECTION CONTROL</b>	
<input type="checkbox"/> Private Well <input type="checkbox"/> CUD Water <input type="checkbox"/> MWSD Satellite System				<input type="checkbox"/> Backflow Device Required <input type="checkbox"/> Approved Backflow Device Installed	
<b>MWSD</b>					
APPROVED <input type="checkbox"/>			DISAPPROVED <input type="checkbox"/>		
DATE:			BY:		



## ***MURFREESBORO WATER & SEWER REPURIFIED WATER CUSTOMER AGREEMENT***

Murfreesboro's repurified water is a valuable resource that originates from City domestic wastewater. The wastewater is subjected to advanced biological and physical treatment, filtration, UV disinfection. Chlorine is added to maintain a secondary disinfection residual, to keep the water fresh and clean. The repurified water is subject to a variety of federal, state and local regulations that protect the safety of the public and the integrity of both the potable and repurified water systems. This repurified water customer agreement establishes the terms and conditions that apply to the ultimate consumer of Murfreesboro's repurified water.

**Use Site:** Shall be the site described in the customer application. MWSD agrees to deliver repurified water to a repurified water meter at the customer's property line at the designated site. Customer agrees that repurified water will be stored and/or used exclusively at the designated site.

**Resale of repurified water:** Customer shall not resell repurified water, and is prohibited from conveying repurified water delivered under this agreement to any other premises or location not specified in the application.

**Water Rate:** Customer will pay for repurified water delivered under this agreement in accordance with rates established by the City Council.

**Site Costs:** The MWSD repurified water distribution system terminates at the meter. The customer is solely responsible for any on site costs arising from the construction, maintenance or operation of the on site portion of the system.

**Compliance with regulations:** Customer agrees to comply with any federal, state and local laws, regulation and standards that may apply to the customer's use of repurified water. Such laws, regulations and standards may include:

- Requirements and restrictions governing the use of repurified water
- Application methods that reasonably preclude certain kinds of human contact with repurified water
- Controlled access to the repurified water, its delivery system, storage and use
- Requirements to prevent repurified water from standing on open access areas during normal periods of use
- Requirements to prevent repurified water from coming into contact with drinking fountains, water coolers or eating areas
- Requirements to identify certain components of the delivery system, or to provide public notice or signage that repurified water is used on the customer's premises

**Color coding:** The use of color coding is required for all public water lines, valves and outlets and appurtenances, and is strongly recommended for distribution and application facilities located on private properties. Pantone Purple 522C.

**Hose bibs:** Customer specifically agrees not to install hose bibs (faucets threaded for hose connections), except in below ground lock boxes, or to utilize existing above ground hose bibs on any component of the customer's repurified water delivery system.

**Signage:** MWSD will provide the customer will an appropriate number of signs that will inform the public that repurified water is used on the customer's premises. Customer agrees to install and maintain such signs at locations indicated by MWSD. Customer may also be responsible for posting other signage that may be required by the State of Tennessee.

**Cross-connection control:** Repurified water is designated as a non-potable water supply. Since it is generally impossible to distinguish repurified water from drinking water by sight or scent, it is important to maintain complete separation of the repurified water and potable water systems. To accomplish this goal, the provisions of the Murfreesboro Cross Connection Control Program as outlined in Chapter 33, Article II, Sections 33-18 through 33-22 shall apply. At a minimum, a reduced pressure backflow prevention device shall be required on the potable water supply for the site served with repurified water.

**Inspection:** Customer agrees that the City of Murfreesboro or any other public agency with the authority to verify compliance with the repurified water use regulation may inspect the customer's premises to verify compliance with applicable laws and regulations. Customer further acknowledges the responsibility and obligation to inform MWSD of certain activities relating to the construction, maintenance and operation of its private repurified water system, including, but not necessarily limited to, materials, construction or modification, testing, violations and emergency situations.

**Plans:** Customer acknowledges the responsibility to maintain a copy of the on site repurified water system at the premises where the water is being used.

**Potential Disruption of Service:** Customer accepts the possibility that MWSD may be required to disrupt repurified water service due to emergency conditions, peak demands, or planned system maintenance. MWSD will not be responsible for any damage or loss that may be sustained because of such disruptions. When there is an unforeseen emergency, MWSD may terminate delivery of repurified water without notice. When notice of an emergency is given, customer agrees to reduce or cease usage of repurified water upon request by MWSD. In order to accommodate peak demands or planned maintenance, MWSD shall provide twenty four (24) hours notice of the need to cease or reduce repurified water usage.

Transfer of property: Customer agrees that all leases of the premises subject to this agreement shall be in writing and must be made expressly subject to this agreement. Should the customer sell or otherwise transfer ownership or control of the premises described herein to a third party, MWSD shall not be obligated to provide repurified water to any subsequent owner or customer unless such sale or disposal incorporates this agreement by reference, and makes any successors and assigns expressly subject to this agreement. If such third party disposition does not include such provisions, customer must close its account with MWSD and pay any fees or charges incurred by customer.

Termination of service: Customer acknowledges that potable water, repurified water and sewer service may be discontinued for failure to comply with the terms and conditions of this agreement, including, but not limited to, failure to pay for potable water, repurified water or sewer services provided by the department.

Other Agreements: Unless expressly listed, this agreement constitutes the complete and entire agreement between the customer and MWSD as regards repurified water. If applicable, list other agreements in an attachment to the Repurified Water Application for Service.

*By my signature below, I certify that I have read and accept the terms of this agreement for repurified water service.*

Print Name: \_\_\_\_\_

\_\_\_\_\_  
*Signature* Date \_\_\_\_\_



## **SECTION 4 DESIGN CRITERIA, POTABLE WATER FACILITIES**

The following sections are design criteria to be used in the design of proposed domestic water systems and fire-flow delivery. The developer and his engineer shall be responsible to ensure that designs submitted are consistent with the MWSD Standard Technical Specifications and Details and the Tennessee Department of Environment and Conservation Division of Water Supply Community Public Water Systems Design Criteria. The design shall adhere to the Tennessee Department of Environment and Conservation Bureau of Environment Division of Water Supply Chapter 1200-5-1.

Note that these standards are intended to be a guide that answers the most perfunctory of questions relating to water system design and are not intended to cover every scenario or be exhaustive in detail. These standards only apply to MWSD. If Consolidated Utility District (CUD) is the potable water service provider, the Developer is to coordinate their design with CUD's design criteria.

### ***4.1 Main Line Sizes & Materials***

For commercial, industrial, public and multi-family areas, Class 52 ductile iron pipe shall be required for all sizes of potable water main for distribution. For detached single family residential areas and pipe sizes 4 through 8 inches in diameter, AWWA C-900, DR 18 plastic pipe and/or Class 50 ductile iron pipe shall be allowed. In all cases pipe 10 inches and larger shall be Class 52 ductile iron pipe unless otherwise directed.

1. The minimum size pipe shall be 8 inches, except in cul-de-sacs or as approved by the department.
2. For cul-de-sacs less than 400 feet, 4 inch lines may be used where fire flows are provided from a principal water main in a secondary street.
3. The minimum pipe size to a fire hydrant shall be 6 inches for fire hydrant leads less than or equal to 50 feet in length. For fire hydrant leads greater than 50 feet a minimum 8 inch pipe is required..

Facilities will be defined by the Department's System Master Plan and will be designed and constructed to meet the intent of these plans. Developer facilities will be designed by the developer and transferred to the Department upon satisfactory completion of final inspection and completion of an actual Construction Cost Affidavit.

### ***4.2 Design Flows***

Residential design flows shall be based on a demand of 260 gallons per single family unit per day. Commercial/Industrial design flows shall be calculated based on the developer's estimated water demands for the proposed development. Hydraulic calculations shall be

submitted with the required fire-flow demands as determined by the City of Murfreesboro Fire Dept. and as described in section 4.5. Note that each fire hydrant can only be modeled to deliver 1,000 gpm. Residual pressure must be maintained at 20 psi while achieving fire-flow demands.

### **4.3 Standard Location**

Domestic waterline centerlines must be located six (6) feet from the face of the curb. Water lines will not be allowed between residential lots. In cases where there is no other way to serve a proposed development except between residential lots, there must be a separate lettered lot, minimum width 30 feet, if a water line needs to go outside streets from cul-de-sac to cul-de-sac. In the case where existing lots are already developed, an easement of a minimum width of 30 feet shall be required.

The Murfreesboro Water & Sewer Department will upon review of the water systems, request that loops be made available for redundancy to enhance water quality in the potable water system and increase dependability of water supply for fire protection. If only one (1) potable water feed supplies a proposed development, a secondary loop will be expected to be installed between developments. The Developer will be required to negotiate and acquire the necessary easements.

### **4.4 Valve Arrangements**

Sufficient valves shall be provided on water mains so that inconvenience and sanitary hazards will be minimized during repairs. Valves should be located at not more than 500 foot intervals in commercial districts and at not more than one block or 800 foot intervals in other districts. Where systems serve widely scattered customers and where future development is not expected, the valve spacing should not exceed one mile.

### **4.5 Fire Flow Requirements**

The design requirements used to determine fire flow requirements **will be determined by the City of Murfreesboro Fire Department**. Any plan submitted for second plan check must have been reviewed and approved by the City of Murfreesboro Fire Department.

For 1 and 2 family dwellings not exceeding two (2) stories in height, the water main shall be sized to provide the following needed fire flows:

<u>Distance Between Buildings</u>	<u>Needed Fire Flow</u>
Over 100 feet	500 gpm
31-100 feet	750 gpm
11-30 feet	1000 gpm
10 feet or less	1500 gpm

Water mains shall be sized in anticipation of the fire flow required for adjacent properties assuming compatible zoning classification with the project under design.

Water mains and system design shall be such that fire flows and facilities are in accordance with the requirement of the regional or local Insurance Services Office and the local fire official. Fire flows may be modified downward with the permission of the

local fire official where the development of full fire flow requirements are impractical or as otherwise determined by the fire official.

#### **4.6 Hydrant Spacing and Location**

The location and number of fire hydrants for all buildings and premises other than single family dwellings shall be based on the requirements of the International Fire Code, 2000 Edition, state regulations and/or Insurance Services Office requirements, whichever is more restrictive.

In general, for residential areas, one fire hydrant shall be placed near each street intersection and intermediate hydrants between intersections shall be spaced so that there is approximately 500 feet between hydrants.

In high value districts fire hydrants shall be placed to provide Class 2 or better fire service classification.

Each hydrant lead shall be valved from the main water line. The valve shall be located approximately 2 to 3 feet from the main line in accordance with the Department's Standard Technical Specifications and Details Drawings for the installation of water mains.

#### **4.7 Water Meters**

All residential water meters will be furnished and installed by the Department, subsequent to payment of all applicable fees. All industrial, commercial or individual service meters must be supplied and installed by the Department upon approval of the non-single family application as described in Section 2.4 and payment of all required fees.

#### **4.8 Water Main Taps**

Main lines under pressure shall be tapped by the Department. The Department shall provide the tapping sleeve, valve boxes and blocks, and complete the tap. The Contractor shall begin laying the water line from the tapping valve and shall be responsible for digging the pit prior to installing the tapping sleeve and valve, shall backfill the tap pit, and be responsible for any pavement replacement. All excavation under existing pavement shall be backfilled with crushed stone. Payment of fees for mainline taps may be required prior to MWSD making said taps.

Contractors shall be responsible for any inactive main line connections unless otherwise directed by the Department. Contractors shall also be responsible for all traffic control planning and devices, as approved by the standard MUTCD guidelines, and all Street Cut permitting required through the City of Murfreesboro's Street Department.

All service line connections shall be made by the Department. Service line connections include the main line tap, a corporation stop, the copper service line laid to the road right-of-way and a curb stop at the end of the service line.

#### **4.9 Standard Water Notes**

The following Standard Water Notes shall be included on all improvement plans for the installation of domestic water systems:

- A. The water system is to be installed by the developer. All water system work shall conform to the Departments Technical Specifications, as last revised.
- B. The Department Engineering Office shall be called for inspection four (4) working days before start of work at (615) 848-3200.
- C. A pre-construction conference of representatives from affected utilities and the contractor shall be held on the job site 48-hours prior to start of work.
- D. The water system is to be staked by the developer's engineer at a minimum 50-foot stationing if there are no existing curbs.
- E. Any water service found to be within a driveway or sidewalk shall be removed completely and re-installed at the proper location at no cost to the Department.
- F. All main line valves shall be maintained so as to be accessible during tract development, and all valve stem tops having over 48-inches of cover will require an approved extension.
- G. In residential streets, the top of the pipe, 10-inches and smaller, shall be a minimum of 42-inches below the finished street surface.
- H. All fire hydrants shall be set with the bottom flange 4-inches above the concrete pad or sidewalk without the use of spools and shall be located a minimum of 3 feet from the ECR or BCR at intersection.
- I. No taps or other connections shall be made to existing Department water mains prior to conducting an approved pressure test on the new water distribution system. Tapping of the main line shall be done by the Department.
- J. Where meters and meter boxes are located within slopes, the angle meter stops shall be so located that the meters and boxes will be parallel and flush, respectively, with the finished surface.
- K. No meter is to be placed within any sidewalk or driveway area.
- L. Curbs shall be inscribed with a "W" indicating locations of all domestic water services.
- M. Individual pressure regulators are required by the Uniform Plumbing Code if average static pressure in the main is 80 psi or more.
- N. The contractor shall expose all join points to the existing domestic water system for verification of horizontal and vertical location before construction.
- O. The contractor working on MWSD waterlines must have an MU license.

#### **4.10 Miscellaneous Standard Guidelines**

- A. The plans shall show, in plan and profile views, the position of all other known existing underground utilities as well as proposed underground utilities. Vertical clearance at crossings shall be indicated by showing top of pipe and bottom of pipe elevations at the point of intersection.
- B. Temporary blow-off assemblies shall be installed at the end of all mains and large service stub-outs for testing and flushing purposes.
- C. Air and vacuum relief valves shall be installed at all high points of water mains 10-inches and larger.
- D. If the project is within the boundaries of Consolidated Utility District, "CUD",

the Developer is responsible for coordination of water line design and installation with CUD. The Developer is responsible for submitting to this Department, acceptable plans, hydraulic calculations, a materials quantities list, and an engineer's estimate of construction costs. CUD water designs must show the relationship between the water line and the proposed sanitary sewer. The water line design and installation must meet the minimum design criteria and specifications of the Department or that of CUD, whichever is greater.



# SECTION 5 DESIGN CRITERIA, SANITARY SEWER FACILITIES

## 5.1 Size

The Department will not accept sewer mains smaller than 8-inches in diameter for operation and maintenance. Non-single family residential applications may not have a 6" lateral length longer than one hundred and fifty (150) feet. If longer than 150', then 8" diameter main with manholes must be installed and dedicated in easement as public sewer. Sewer mains that are constructed in a common trench with another utility will not be accepted by the Department. Adequate horizontal and vertical spacing shall be maintained in accordance with MWSD Approved Technical Specifications, latest edition. Developer facilities will be designed and constructed by the developer and upon satisfactory completion of final inspection an actual Construction Cost Affidavit shall be filled out and provided to the Dept. In the event that a facility through a Development has been identified via the 201 Wastewater Facilities Plan or a Sub-basin Area Master Plan ("SAMP") to exceed eight (8) inches in diameter, the Department may consider participating in the development costs of said facility. The Department will only consider participation if the terms are established prior to the execution of the Developer's Agreement and included as a supplement to said Agreement.

## 5.2 Minimum and Maximum Slope

All sewers shall be designed and constructed to provide a mean velocity of not less than two (2) feet per second (fps) at the estimated peak flow as calculated using Manning's formula using an "n" value of 0.013. The maximum allowable slope shall be the slope which generates a maximum flow velocity of 8 fps at the peak flow rate as calculated using Manning's equation and an "n" value of 0.013. Peaking factors are shown on Figure 17 at the end of this section.

Minimum slopes by pipe size:

Sewer Size	s =
6	0.0055*
8	0.0040
10	0.0028
12	0.0022
15	0.0015
18	0.0012
21	0.0010
24	0.0008
27	0.00067
30	0.00058

\*The minimum slope on 6-inch sewer shall be 1% or s=0.010 where the tributary area consists of less than 20 single family units (sfu).

Sewers should be designed to provide steeper slopes whenever possible up to the stated maximum slope. Under special conditions, the engineer may request slopes of less than the minimums stated. The engineer must submit this request along with back-up data and calculations to show that the depth of flow at design average flow will be 0.3 of the pipe diameter or greater. The engineer must also submit computations to show the depths of flow at minimum and average rates of flow. The request shall also detail the reasons why the normal minimum slopes cannot be achieved. The request and supporting data will be reviewed by the Department Engineer and his decision will be conveyed to the applicant. See Figure 19 for hydraulic calculation submittal.

### **5.3 Flow Design Criteria**

The flow rate for residential sewer mains should be calculated using a base generation rate of 260 gallons per single family unit per day (gpd/sfu) with the appropriate peaking factors applied (see Figure 17). Commercial/industrial flow design criteria should be calculated by the developer's engineer based on projected generation rates for the specific development. The design peak flow rate in pipes 12-inches and smaller will be limited by the depth ratio of  $d/D = 0.67$ ; 15" pipes  $d/D = 0.75$  and 18-inches and larger  $d/D = 0.85$ , where "d/D" is the ratio of calculated flow depth to pipe diameter.

### **5.4 Standard Location and Alignment**

In local residential and industrial streets, sewer mains are to be located five (5) feet from the centerline of the street in the center of the driving lane. In major, primary, and secondary highways, the sewer mains will be located in the center of the driving lane nearest to the center of the street, but will not be located in the median strip or parking lanes. On curved streets, sewer mains shall be parallel with the centerline of the street by use of horizontal curves for the alignment, unless approved by the Department Engineer. A maximum horizontal separation between sewer and domestic water mains shall be achieved by aligning the sewer on the opposite side of the centerline from the domestic water main.

### **5.5 Stationing Procedure**

Centerline stations for sewer mains shall be shown and will be independent of street stationing. All manholes are to be numbered and the numbers noted on the plans (example: MH #1). Sewer stations start 00+00.00 at the downstream point of connection and increase upstream to the last manhole on a sewer line. Intersecting sewer lines will be independently stationed from their downstream point of connection and increase upstream to the last manhole or clean-out. Each line shall be independently labeled for identification as "Sewer Line A", "Sewer Line B", etc. Cut Sheets (see Figure 18) and mention requirement of lot corners staked.

## **5.6 Minimum Depth**

Minimum depth of cover from finish street grade to the top of sewer main pipe shall be three feet unless otherwise approved by the Department Engineer. Six-inch (6") sewer house connections shall be installed so that there is a minimum of four (4) feet of cover from the top of the curb to the top of the pipe at the curb line. At the time of construction, stakes shall be provided for lot lines in order to locate each house lateral in the center of the lot.

## **5.7 Manholes**

### **5.7.1 Manhole Requirements**

A manhole will be required at:

- A. The end of each line, change in grade or size, change in alignment, or intersection of two (2) or more mains.
- B. Along the main at maximum distances of 400 feet for 8 to 15-inch sewers, and 500 feet for 18 to 30-inch sewers.

### **5.7.2 Manhole type and size**

Manholes shall be precast reinforced concrete with concentric cone in accordance with Department's Standard Drawings S-1 through S-4 and Standard Technical Specifications. Minimum diameter shall be 48-inches and larger sizes will be required as shown in the following table:

**MANHOLE SIZES**

Sewer Main (inches)	Maximum Branch Size (inches)	MH Size (inches)
8-15"	10"	48"
18-24"	12"	60"
24-36"	15"	72"

### **5.7.3 Manhole covers**

Manhole covers shall be cast-iron in accordance with Department Standard Drawing S-4. The size shall be determined from the table above. At the completion of final paving, each manhole shall be raised to final grade by the installation of grade rings, as necessary, and the installation of the permanent frame and cover assembly.

## **5.8 Clean-outs**

Clean-outs shall be installed per the applicable plumbing code. Murfreesboro Water & Sewer Department's Operation and Maintenance crews shall install municipal clean-outs at the right-of-way line for residential properties. Non-residential tracts and multi-family

tracts shall install clean-outs per the Department's Standard Drawing P-3 (Figure 20), unless approved otherwise by the Department Engineer.

### **5.9 Force Main Criteria**

The size of sewer force mains shall be determined during the design phase of the project and only after a comparative study of the construction cost and pumping costs for several alternative sizes. In no case shall a force main be less than 4-inches in diameter. The capacity of the force main shall be the design peak flow from the pump station calculated from Manning's equation using "n" = 0.013. The minimum design velocity for a force main shall be 2.0 fps, and the maximum design velocity maximum allowed 8.0 fps. The discharge shall be into a manhole per standard detail S41A and S41B. The manhole shall be Xypex entrained per the Standard Technical Specifications.

### **5.10 House Laterals**

Sewer laterals shall be constructed to the property line from the main line and there shall be a separate lateral for each individually owned building. Sewer laterals shall have a minimum 6-inch diameter. Apartment and condominium developments shall have at least one (1) 6-inch, or one (1) 8-inch lateral to serve each building in the development which contains more than one dwelling unit. The sewer laterals from the main to the building, and inside the buildings are **private, not maintained by MWSD and** governed by the Uniform Plumbing Code and enforced by the local building authority **and they should be so marked on the improvement plans..**

### **5.11 Sewage Pumping Stations**

#### **5.11.1 Pumping Stations Not Allowed by Default**

The guiding criteria or principles listed below are stated in order to establish consistency in approvals and educate developers that pumping stations are not considered as a development solution until the following items have been provided:

1. A sub-area master plan ("SAMP") must be provided indicating gravity sewer as the primary option that is consistent with the Department's 201 Wastewater Facilities Plan ("Plan").
2. Pump stations will only be considered if gravity sewer is proven to be unable to be provided in existing or future extensions of the Plan or SAMP.
3. Gravity sewers and pumping stations will be sized to accommodate sewerage demands within the intended service basin.
4. Gravity sewers and pumping stations will not be allowed to extend beyond their intended service basins.
5. Unless the extension is specifically identified within an existing SAMP or the Plan, it's fulfilling a public purpose will need to be determined on a case by case basis by the Director (see Section 1.3.5. – Offsite Easement Agreements & Public Purpose).

6. When a SAMP is developed by staff for particular service basins, branch gravity collectors will be deemed as fulfilling a public purpose.

The following pumping station standards shall be adhered to: Developers will pay all the costs to design and construct the pumping station. Department participation may be solicited only if the pumping station is requested to pump more than 200% the amount determined to serve proposed area of development. In the event the Dept. participates in funding of the pumping station, it shall only participate in the cost to increase the pumping station above the 200% mark established by the proposed development.

### 5.11.2 Pumping Station Standards

- No brush or tree planted that will block access to the wet well or any outside unit like HVAC that requires service
- Design stations shall be designed so as to accept connection to MWSD's six-inch portable pump (details available).
- All stations shall include a diesel or LP fired generator.
- Personnel setting up any COM units, towers, and equipment shall be licensed by the appropriate agencies.
- All pump station controls must be pre-approved the MWSD's Engineering Dept.
- Vents shall not be located near an HVAC unit or pumping station controls.
- All pumping station access drives shall have paving design adequate for HS20 loading.
- Controls for underground pumping stations shall have all controls located in a 10'x12'x8' enclosure capable of withstanding 30 psf snow load and 125 mph wind load. Enclosure to contain acceptable lighting, exhaust fan, louvers, 2-ton A/C unit, 15 kVA transformer, 6'x6'8" double doors, main breaker panel, and all other appurtenance as required by MWSD.
- For underground pumping stations, a four-inch sump pump will be required.
- Odor control shall be required over wet well vents without forced air.
- Odor control media shall be submitted for approval by MWSD Engineering Dept.
- All bubbler line shall be PVC and encased with going through walls or concrete slabs. All bubbler line shall be installed so that replacement from surface shall be made easy.
- Valves shall be installed in-line as directed by approved shop drawings to isolate the air going to controls from the air compressor controlling the bubbler line.
- A cleaning "blow-out" connection shall be provided for clearing bubbler lines and shall be easy to get to.
- Four (4) extra conduit shall be run to all pumping stations as spares.
- A redundant back up float control with alarms shall be required on all pumping stations. The alarm shall be labeled "**Back up float control on line.**" The redundant float system shall be wired separately or stand-alone (i.e., not wired to with the primary controls).
- Require high wet well level float switch that would only work when the back up float system failed. This would normally mean pumps or more have failed. Set the level below overflow so we can get to it. **High Wet Well** would be high priority.

- All underground pumping stations shall require man down alarms.
- All wet wells shall be accessible to MWSD's vacuum truck for cleaning wet wells.
- A frost-proof yard hydrant shall be required at every station.
- Exterior security lights shall be installed at every station.
- All pumping stations shall have accommodations for telemetry. MWSD's Wastewater Treatment plant personnel shall provide all specs and approved manufacturers for telemetry components.
- All pumping station shall have back up air compressors.
- John Crane safeunit water seal controls shall be supplied on all pump water seals.

### **5.12 Standard Sewer Notes**

The following notes must appear on the plans under Standard Sewer Notes.

- A. The sewer system is to be installed by the developer. All sewer work shall conform to the Department's Sanitary Sewer Technical Specifications and these Policies and Procedures, as last revised.
- B. The sewer contractor shall have a copy of the Department's Standard Specifications on the job.
- C. The contractor shall obtain a City or County permit for work done on public right-ofway.
- D. The Department Engineering Office shall be called for inspection four (4) working days before start of work at (615) 848-3200.
- E. A pre-construction conference shall be held 48 hours before starting construction work.
- F. The contractor shall expose all join points to the existing sewer system for verification of location and elevation before construction.
- G. Sewer stationing shall be independent of all other alignment stationing.
- H. All laterals are to be staked by a surveyor before trenching and a complete set of cut sheets supplied to the Engineering Department.
- I. The Department will inspect the sewer collection system and lateral sewers to the property clean-out. Privately owned residential sewer laterals from the property line clean-out will be inspected by the Department's Operation and Maintenance Division.
- K. Infiltration and air testing of sewer lines shall be in accordance with the Department's Standard Technical Specifications, as last revised.
- L. All sewer lines shall be mandrelled in the presence of the Department Inspector before completion of all leakage tests.
- M. Pipeline leakage tests shall be made in the presence of the Department Inspector, only after backfill has been completed, compaction tests on backfill have been made, and the backfill has been accepted by the Department Inspector.
- N. All sewer main lines 8-inches and larger are to be inspected by the Department using a closed circuit television system. A video tape recording will be made of the inspection.
- O. Before final acceptance, the developer's engineer signing the plans shall furnish the Department with a set of as-built mylars of the sewer plan.
- P. Curbs shall be inscribed with an "S" indicating locations of all sewer laterals.
- Q. The contractor working on MWSD sewer mains must have an MU license.

Figure 17.

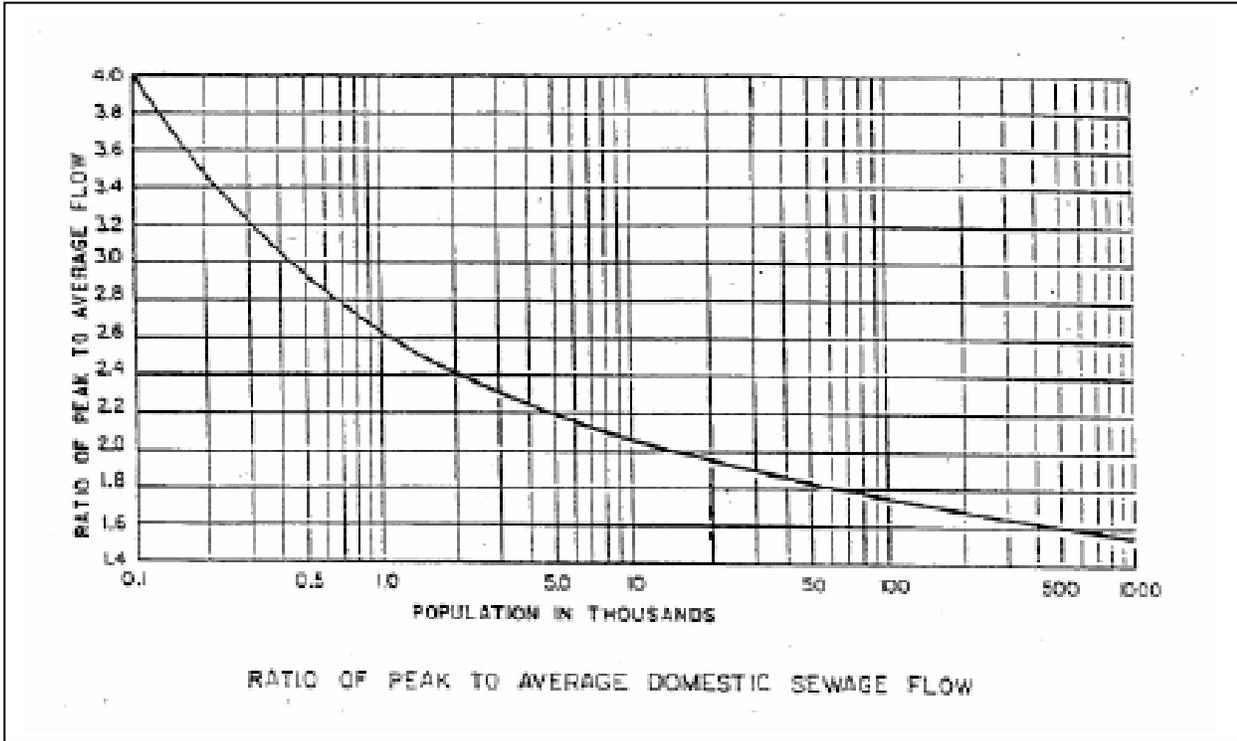




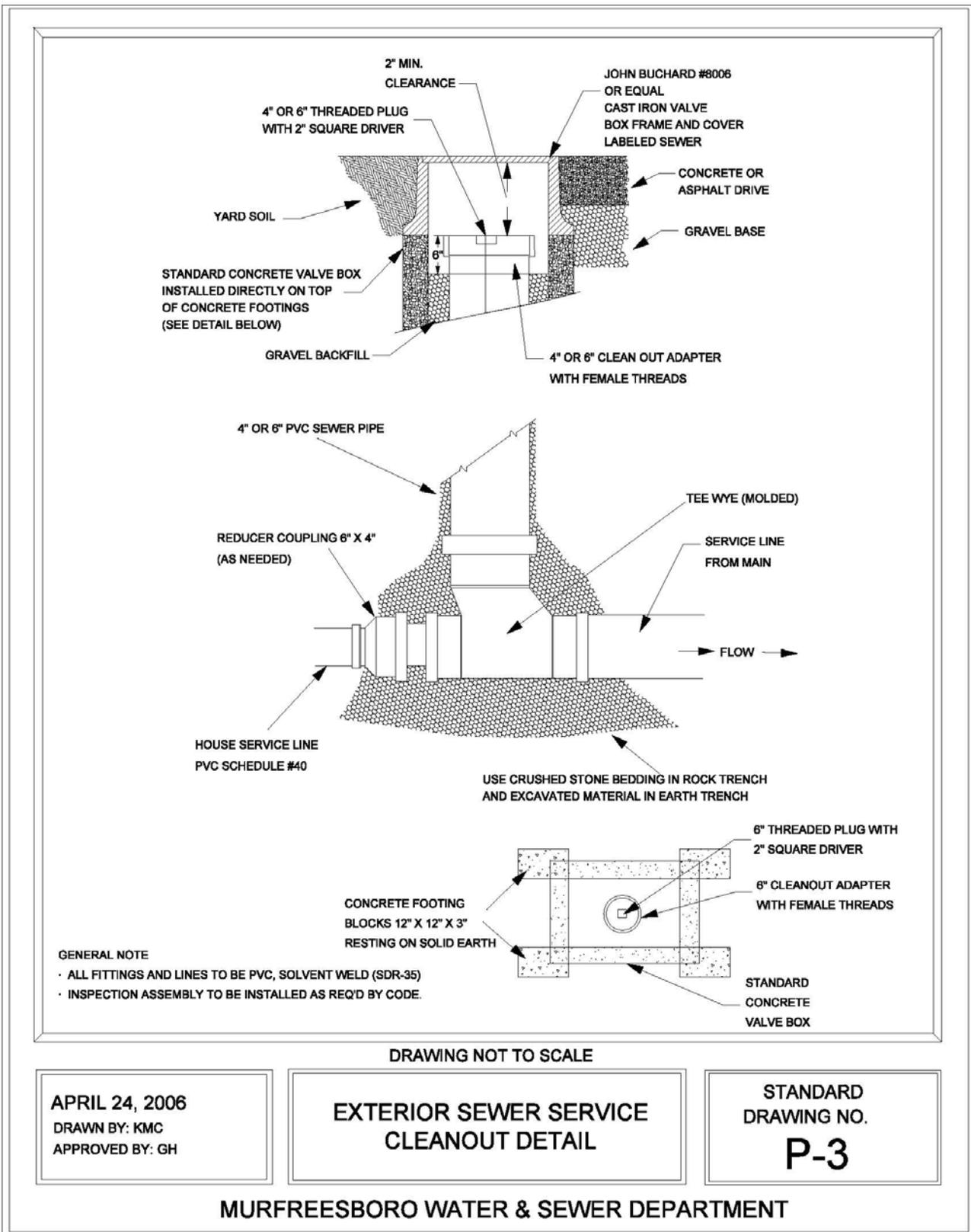








Figure 20.



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## **SECTION 6 DESIGN CRITERIA, REPURIFIED WATER FACILITIES**

### **6.1 General**

All potential uses of repurified water, including, but not limited to, uses for landscape irrigation systems, agricultural irrigation systems, systems used for industrial process or construction purposes, or recreational impoundment systems, or flushing toilets and urinals in non-residential buildings shall be reviewed by the Department. If repurified water is to be used, the facilities shall be constructed in accordance with the procedures and requirements set forth below. As set forth in the Department's Ordinance §33-300 through 33-304 the Department shall determine whether a given service will be furnished with repurified water or potable water. **All on-site facilities using repurified water will have an annual cross connection test unless otherwise approved by the state and county health agencies based on a case by case basis. Details of specific cross connection tests can be found in this section. An application is required and subsequent approval by the Department is required for repurified water service.**

### **6.2 Design And Construction Criteria**

The design criteria for repurified water facilities is separated into two categories. Off-site repurified water facilities typically consist of those repurified water facilities which are, or will be, owned, operated, and maintained by the Department such as transmission or distribution mains in public rights of way. Typically these are facilities on the upstream side of the water meter. Onsite repurified water facilities typically consist of facilities which will be owned, operated, and maintained by the customer, and are downstream of the water meter. The Department typically constructs, operates, and maintains repurified water facilities, upstream of the water meter.

### **6.3 Off-Site Repurified Water Facilities**

The typical minimum size distribution main shall be a 4-inch looped line. Smaller diameter mains may be individually approved by the Department Engineer on deadend mains or the possibility of future tie-ins with other mains. These mains shall be sized so that sufficient water is regularly drawn to prevent stagnation. Only 1-inch and 2-inch purple polybutylene (PB) plastic pipe produced and labeled as ASTM-D-3309-85b with brass or copper fittings are approved for service lines.

The Developers shall bear the entire costs of all off-site repurified main through ten (12) inch in diameter and any repurified mains larger than twelve (12) inches that are required to solely service a particular subdivision or development, and manholes, appurtenances, and house service lines to each lot for all subdivisions and developments connected to the Murfreesboro sewerage system.

The costs of repurified water facilities required to extend the city system to a particular subdivision or development, and costs of repurified facilities within a development shall be shared between the developer and the City when the lines and/or facilities are upsized

for future growth in accordance with the Master Plan for Repurified Water Facilities, or as upsized by the Water and Sewer Department. The developer's portion of the costs shall be an amount up to the cost of the required lines and/or facilities sized to solely serve the development.

Cost sharing shall be determined as set out in Section 1.10.

Developer facilities will be designed by the developer and transferred to the Department upon satisfactory completion of final inspection.

#### **6.4 Standard Off-Site Repurified Water Notes**

The following notes must appear on all plans for construction of off-site repurified water facilities and be identified as "Repurified Water Notes". In addition the Standard Water Notes shown in Section 3.10 of this Guide must appear on the plan as well.

- (1) All off-site repurified water systems shall be constructed in accordance with the requirements of the Department's technical specifications for repurified water systems.
- (2) Repurified water pipe shall be purple PVC C-900 pipe, class 150 DR18, marked as required by Department standards to identify it as repurified water. DIP may be used with the approval of the Department but it must be marked with purple marking tape and installed with purple polyethylene socks.
- (3) All 1-inch and 2-inch services shall be purple polybutylene (PB) plastic pipe produced and labeled as ASTM-D-3309-85b with brass or copper fittings

#### **6.5 On-site Repurified Water Facilities**

##### **6.5.1 General**

Design of all on-site facilities including, but not limited to, landscape irrigation systems, agricultural irrigation systems, systems used for industrial process, construction purposes, toilet and urinal flushing in non-residential buildings, or recreational impoundment systems shall conform to the provisions set forth herein and to any conditions, standards, and requirements set forth by the Department in addition to these standard specifications.

##### **6.5.2 Design of Repurified Water Facilities with Temporary Potable Water Service**

Before design, the developer should obtain the following from the Department:

- A. Approval to use repurified water for the proposed system.
- B. Verification of locations and size of proposed points of connection (meter facilities).
- C. Design pressures for the proposed facilities. As set forth in the MWSD Rules and Regulations, where repurified water is not immediately available for use when the design area is ready for construction, and if the Department has determined that repurified water will be supplied in the future, the on-site facilities shall be designated to use repurified water. The on-site system shall be designed and constructed to the Department's construction specifications as set forth herein. Provisions shall be made

as directed by the Department and these specifications followed to allow for connection to the repurified water facilities when they become available. In the interim, potable water will be supplied to the repurified water facilities through a temporary potable water connection. Until repurified water is available, potable water rates will be charges as set forth in the Schedule of Rates and Charges, Exhibit “B” to the MWSD Standard Development Contract. A backflow prevention device acceptable to the Department, will be required as long as the on-site facilities area uses potable water. The backflow prevention device shall be downstream of the meter and a part of the on-site facilities. When repurified water becomes available, the backflow prevention device will be removed by the owner and the on-site facility reconnected to the meter. See section 6.8 for more details in removing the backflow prevention device from the potable water system when repurified water service becomes available.

### **6.5.3 Backflow Prevention Devices and Signage**

Backflow prevention devices will not be required on the on-site repurified water facilities using repurified water. Backflow protection devices shall be required of the developer’s, owner’s, or customer’s potable water service. All new common areas where repurified water is used and that are accessible to the general public shall be posted with conspicuous signs that include the flowing wording in a size acceptable to the Department:

**“REPURIFIED WATER - DO NOT DRINK “** or **“ REUSE WATER – DO NOT DRINK “** and **“AVISA - AGUA IMPURA - NO TOMAR”** on the other side. Each sign shall also display an international symbol conveying the same warning.

### **6.5.4 Prohibitions and Limitations**

Design of on-site repurified water facilities shall conform to the following:

- (A) The repurified water system shall be separate and independent of any potable water system. Cross connections between potable water facilities and on-site repurified water facilities are prohibited.
- (B) Hose bibs on repurified water facilities are prohibited, unless expressly approved by the Dept. in writing.
- (C) Drinking fountains shall be protected from the spray of repurified water in a manner approved by the Department Engineer, prior to installation.
- (D) Overspray and runoff shall be limited or prevented.
- (E) Potable and repurified lines are not to be installed in the same trench.
- (F) Repurified water shall not be used for any purpose other than the approved uses as set forth herein.
- (G) The system shall be designed to irrigate the design area within the allowable time periods as set forth herein.

### **6.5.5 Control of Runoff and Application Areas**

The Department encourages new and innovative methods of irrigation. The use of drip or subsurface irrigation may prove effective in the reduction of total water consumption and

control of unnecessary runoff by containment of the water to the design area. In accordance with the requirements of the MWSD Rules and Regulations for control of runoff and for control of the areas to which repurified water is applied, the design of irrigation systems shall conform to the following:

- (A) The on-site repurified water facilities shall be designed to meet the peak moisture demand of all plant materials used within the design area. The application rate shall not exceed the infiltration rate of the soil.
- (B) On-site repurified water facilities shall be designed to prevent discharge onto areas not intended to receive irrigation water. Part circle sprinklers shall be used adjacent to roadways and property lines to confine the discharge from sprinklers to the design area.
- (C) The design of the on-site repurified water irrigation facilities shall provide for watering during the periods of minimal use of the service area. This is between the hours of 9 p.m. and 6 a.m., or as directed by the Department Engineer. If sub-surface drip irrigation is employed, then irrigation can be performed at any time of the day.
- (D) Repurified water shall be applied at a rate that does not exceed the infiltration rate of the soil. Where varying soil types are present, the design of the repurified water facilities shall be compatible with the lowest infiltration rate present. Copies of the developer's soils test reports shall be made available to the Department upon request.

### **6.5.6 Minimum Depth to Top of On-Site Repurified Water Piping**

For on-site repurified water piping, the minimum depth from finished grade to top of pipe (minimum cover) shall be 18" from finished grade.

### **6.5.7 Data Required on Plans**

- (A) Meter Data - The following information shall be supplied for each repurified water meter desired; information is to be provided and shown at each meter location.
  - a. The meter location and size (inches); meter address and civil station number.
  - b. The peak flow through the meter (gpm).
  - c. The (static) design pressure at the meter (psi).
  - d. The total area served through the irrigation meter in square feet or acres.
  - e. An estimate of the yearly water requirement through the meter (acre-feet).
- (B) Drinking Fountains - Exterior drinking fountains must be shown and called out on the repurified water system plans. If no exterior drinking fountains are present in the design area, it must be specifically stated on the plans that none exist. Drinking fountains must be protected from the direct spray of repurified water either by proper placement of the drinking fountain within the design area or the use of a covered fountain approved for this purpose.
- (C) Irrigation Equipment Legend - For irrigation systems, a legend showing the pertinent data for the materials used in the system shall be recorded on the plans. The legend shall include a pipe schedule listing pipe sizes and materials of construction, a listing of valve types including quick-coupling valves, and the following information for each type of sprinkler head:
  - 1. Manufacturer and model number.
  - 2. Sprinkler radius (feet).
  - 3. Operating pressure (psi).

4. Flow (gpm).
5. Sprinkler pattern.

### **6.5.8 Operation & MWSD Inspection of Repurified On-Site Facilities**

#### **A. General**

The operation and surveillance of onsite water distribution, sewer collection, and recycled water distribution facilities are the responsibility of the applicant, owner, or customer.

#### **B. ON-Site Repurified Water Facilities**

Pursuant to these Policies & Procedures, the Director or authorized representatives of MWSD may monitor and inspect the entire repurified water system, including On-site and Off-Site facilities, and for these purposes shall have the right to enter upon the customer's premises during reasonable hours. The applicant, owner, or customer shall have the following responsibilities in relation to operation of On-site facilities:

1. To make sure that all operations personnel are informed and familiarized with the use of repurified water.
2. To furnish their operations personnel with maintenance instructions, controller charts, and record drawings to ensure proper operation in accordance with the On-site facilities design and these Rules and Regulations.
3. To notify MWSD of any and all updates or proposed changes, modifications, or additions to the On-site facilities, which changes shall require approval by MWSD and shall be designed and constructed according to the requirements, conditions, and standards set forth in MWSD's and set forth in these Rules and Regulations, including but not limited to Section 5.3 thereof. In accordance with the above referenced requirements, conditions, and standards, changes must be submitted to MWSD for plan check and approval prior to construction. The construction shall be inspected by MWSD, and revised record drawings shall be approved by MWSD. MWSD may, if it deems such to be in the best interest of RWD, waive or modify any of the foregoing.
4. The repurified water facilities must be maintained in accordance with these Rules and Regulations including MWSD's Standard Specification. For example, but not by way of limitation, as stated in the design criteria section of the above referenced specifications:
  - a. Cross-connections between potable water facilities and on-site repurified water facilities are forbidden.
  - b. Hose bibs on repurified water facilities are forbidden, unless otherwise authorized by MWSD.
  - c. Drinking fountains and pools shall be protected from the spray of repurified water.
5. The operation and control of the on-site system shall prevent direct human consumption of repurified water and control and limit runoff. The applicant, owner, or customer shall be responsible for any and all subsequent uses of the repurified water. Operation and control measures to be utilized in this regard shall include, where appropriate, but not be limited to the following:
  - a. On-site repurified water facilities shall be operated to prevent or minimize discharge onto areas not under control of the customer. Sprinklers shall be

- used adjacent to sidewalks, roadways, and property lines that confine the discharge from sprinklers to the design area.
- b. The operation of the On-site repurified water facilities shall be during the periods of minimal use of the service area. Consideration shall be given to allow a maximum dry-out time before the design area will be used.
  - c. Repurified water shall be applied at a rate that does not exceed the infiltration rate of the soil. Where varying soil types are present, the design and operation of the repurified water facilities shall be compatible with the lowest infiltration rate of the soil present.
  - d. When the application rate exceeds the infiltration rate of the soil, automatic systems shall be utilized and programmed to prevent or minimize the ponding and runoff of repurified water. The sprinkler shall not be allowed to operate for a time longer than the landscape's water requirement. If runoff occurs before the landscape's water are met, the automatic controls shall be reprogrammed with additional watering cycles of shorter duration to meet the requirements. This method of operation is intended to control and limit runoff.
  - e. Report shall be made to MWSD of any and all failures in applicant, owner, or customer's system that cause an unauthorized discharge of repurified water.
6. Project shall comply with any and all applicable Federal, State, and local statues, ordinances, regulations, contracts, these Rules and Regulations, and all requirements prescribed by the Director and the Board. In the event of violation, all charges and penalties shall be applied and collected by MWSD.
  7. Authorized representatives of MWSD may monitor and inspect the entire repurified water system including both On-site and off-site facilities. MWSD shall conduct monitoring programs, maintain a record as deemed necessary, and provide reports as requested by regulatory agencies. The Director or authorized representatives of MWSD, in carrying out these functions, shall have the right to enter the customer's premises during reasonable hours for the purpose of inspecting On-site repurified water facilities and areas of repurified water use and to ensure compliance with these Rules and Regulations. This shall include the provision that runoff shall be controlled and limited and the provision that cross-connections between potable water facilities and repurified water facilities do not exist.
  8. For single-family residences receiving repurified water, the permit holder shall be responsible for providing access and cooperation to MWSD's representative so that MWSD's representative can perform an annual cross-connection inspection. This inspection shall include pressure testing of the repurified water system to verify that no cross-connections have been made. The permit holder will be responsible for correcting any work which violates MWSD regulations at their expense including any costs associated with repairing and testing the backflow device. In addition, if the permit holder changes, an AWWA certified cross-connection specialist from MWSD will perform a cross-connection survey to verify that no cross connections exist.

## **6.6 The Plan Check Procedure**

The submittal of construction drawings for plan checking is to ensure that the proposed use of repurified water conforms to the approved uses as set forth in the following Sections:

### **6.6.1 Plan Check and Inspection**

Completed construction drawings for all on-site repurified water systems must be submitted to the Department for plan checking and approval before construction. Ten working days should typically be allowed for plan check. Two blueprints of the plans, either 24" x 36" or 30" x 42" must be submitted. If there are potable water systems within the design area, the potable water main shall be shown on the repurified water construction drawings. The Department will review the plans and will return one set with any comments. After any comments have been incorporated into the plans and specifications, the plans should be re-submitted to the Department for approval. The Department will provide the signature block.

Minor changes to the systems may be reviewed by the Department's Resident Inspector. If major changes are made to the irrigation system, the owner, applicant, or customer shall provide new construction drawings for review and approval.

The Department reserves the option to inspect the construction of on-site facilities and shall be notified two working days in advance of construction by the applicant, owner, or customer. The Department Engineering Office should be called at (615) 848-3200. In the event the Department elects to inspect the on-site facilities, then no irrigation lines shall be backfilled before inspection by the Department Resident Inspector. If the on-site system is installed prior to plan approval and/or inspection, all or any portion of the systems must be exposed and corrected as directed by the Department Resident Inspector in accordance with the standard specification. Failure to comply will result in termination of service.

Subsequent to plan approval, field conditions may dictate modifications to the onsite system either in material or in intended use. If directed by the Department Resident Inspector the owner, applicant, or customer shall perform all changes or modify the on-site system to bring the system or use into full compliance with these construction specifications and with these Policies & Procedures. If for any reason the system cannot be corrected or modified to the satisfaction of the Department Resident Inspector, the system will be subject to conversion to a potable water supply, as set forth herein.

### **6.6.2 Coverage Test (On-site Irrigation Systems).**

The owner, applicant, or customer is responsible for controlling overspray and runoff on new systems or systems requesting conversion. To ensure that any overspray and runoff is satisfactory to the Department, an inspection of the on-site system by the Department is required. When the sprinkler system is completed and the planting installed, the owner or owner's representative shall contact the Department's Engineering Department at (615) 848-3200 and arrange for a coverage test walk through. The owner or owner's

representative must be in attendance and have persons capable of making system adjustments. If modifications to the system are required, other than minor adjustments, the owner will be notified in writing of the changes required. To avoid termination of service, the modifications must be made in a timely manner. All modifications to the system are the responsibility of the owner, applicant, or customer and said owner, applicant, or customer shall pay all costs associated with such modifications.

### **6.7 Record Drawings**

Record drawings shall be prepared and shall show all changes in the work constituting departures from the original contract drawings including those involving both constant-pressure and intermittent-pressure lines and appurtenances. All conceptual or major design changes including any changes that may be affected by the requirements of these standard specifications, shall be approved by the Department before implementing the change in the construction contract. Failure to receive prior approval may result in termination of service. Upon completion of each increment of work, all required information and dimensions shall be transferred to the record drawings. Facilities and items to be located and verified on the record drawings will include, but are not necessarily limited to the following:

- A. Point of connection.
- B. Routing of sprinkler pressure lines.
- C. Gate valves.
- D. Sprinkler control valves.
- E. Quick-coupling valves.
- F. Routing of control wires.
- G. Other related equipment as specified by the Department Inspector or the owner.  
Changes and dimensions shall be recorded in a legible and workmanlike manner. Record construction drawings shall be maintained at the job site during construction. The applicant, owner, or customer shall provide a complete set of "RECORD" drawings to the Department upon completion of construction. Prior arrangements must be made with the Department if water service is to be provided prior to record blue line submittal. Failure to provide record drawings will result in termination of service.

### **6.8 Conversion From A Potable To Repurified Water Supply**

In general, all irrigation facilities converting from a potable to a repurified water supply shall conform to the Department's construction specifications and policies and procedures as contained herein. The facilities to be converted shall be investigated in detail including review of any record drawings, preparation of required reports, and determinations by the Department of measures necessary to bring the system into full compliance with these standard specifications. The applicant, owner, or customer shall pay all costs to convert the system.

## **6.9 Conversion Of Repurified Water To A Potable Water Supply**

If due to any system failure, use violations, or reasons as determined by the Department, it becomes necessary to convert from a repurified water supply to a potable water supply, it shall be the responsibility of the owner, applicant, or customer to pay all costs for such conversion, by way of, but not limited to, the following items:

- A. **After notifying state and county health agencies of MWSD's intention**, isolate the repurified water supply,, service shall be removed and plugged at the Department main or abandoned in a manner approved by the Department Engineer.  
**The onsite system will then be disinfected in accordance with the following procedures:**
  - **Shock the system to be converted with 50 ppm of chlorine for 24 hours.**
  - **Measure the chlorine residual after 24 hours. If a residual greater than 25ppm is maintained, then continue to the next step. If the residual is below 25 ppm, then re-chlorinate by returning to the previous step until the chlorine residual can be maintained above 25ppm.**
  - **Flush the system with potable water and perform a standard bacteriological test. The final test results must be acceptable to MWSD before recharging the system.**
- B. Installation of approved backflow devices on any and all meter connections.
- C. Notification to all personnel involved.
- D. Removal of all warning labels.
- E. Installation of all potable water lines and payment of all connection fees due, as provided for in the MWSD Standard Development Contract, Exhibit B.

## **6.10 Special On-site Repurified Water Notes**

The following special on-site repurified water notes are to be shown on all on-site repurified water system construction plans:

- A. The installation of the irrigation water system shall conform to the standard technical specifications and policies and procedures for the construction of irrigation water systems within the "MWSD" service area and the accompanying plans.
- B. All on-site constant repurified and potable water main line piping installed on this project shall be identified in accordance with the MWSD Policies and Procedures and the standard technical specifications.
- C. Repurified water piping shall be purple PVC.
- D. Marking on the purple PVC pipe shall include the following:  
**"CAUTION: REPURIFIED WATER - DO NOT DRINK" or "CAUTION: REUSE WATER - DO NOT DRINK"** and **"AVISA - AGUA IMPURA - NO TOMAR"** on the other side. Nominal pipe size. PVC- 1120. Pressure rating in pounds per square inch at 73 degrees. ASTM designations such as 1785, 2241, 2672, 3139. Printing shall be placed continuously on two sides of the pipe.
- E. All repurified water sprinkler control valves, isolation valves, quick couplers, and all appurtenances shall be tagged with identification tags.
  - (1) Tags shall be weatherproof plastic, 3" x 4", purple in color with the words **"WARNING - REPURIFIED WATER - DO NOT DRINK" or "CAUTION: REUSE WATER - DO NOT DRINK"** imprinted on one side, and **"AVISA -**

- AGUA IMPURA - NO TOMAR”** on the other side. Imprinting shall be permanent and black in color.
- (2) One tag shall be attached to each appurtenance as follows:
    - (a) Attach to valve stem directly or with plastic tie-wrap or
    - (b) Attach to solenoid wire directly or with plastic tie-wrap or
    - (c) Attach to valve cover with existing valve cover bolt.
    - (d) Attach to the body of the relative appurtenance with a plastic tie-wrap.
  - F. Warning tape shall be a minimum of 3 inches wide and shall run continuously for the entire length of all constant pressure main line piping. The tape shall be attached to the top of the pipe with plastic tape banded around the warning tape and the pipe every five feet on center.
  - G. MWSD shall be notified two days prior to the start of irrigation construction at (615) 848-3200 and each workday thereafter until completion of project.
  - H. All pressure main line piping from the repurified water system shall be installed to maintain 10 feet minimum horizontal separation from all potable water piping. Where repurified and potable water pressure main line piping cross, the repurified water piping shall be installed below the potable water piping in a Class 200 purple-colored PVC sleeve which extends a minimum of 5 feet on either side of the potable water piping. Provide a minimum vertical clearance of 6 inches. Conventional (white) PVC pipe may be used for sleeving material if it is taped with 3 inch wide purple warning tape which reads “CAUTION, REPURIFIED WATER - DO NOT DRINK” or “CAUTION: REUSE WATER - DO NOT DRINK” imprinted on one side, and “AVISA - AGUA IMPURA - NO TOMAR” on the other side.
  - I. The irrigation system has been designed to and must be operated between the hours of 9:00 P.M. and 6:00 A.M. unless otherwise directed by the Department Engineer. The use of sub-surface drip irrigation shall be allowed continuously with no hourly restrictions as to operation.
  - J. All new common areas where repurified water is used and that are accessible to the general public shall be posted with conspicuous signs that include the following wording in a size no less than 4 inches high by 8 inches wide: “REPURIFIED WATER - DO NOT DRINK “ or “ REUSE WATER - DO NOT DRINK “and “AVISA - AGUA IMPURA - NO TOMAR” on the other side. Each sign shall also display an international symbol conveying the same warning.
  - K. Adjust spray heads to eliminate overspray onto areas not under the control of the customer. For example: pool decks, private patios, streets and sidewalks.
  - L. Contact MWSD Engineering Department office two days prior to the irrigation system coverage test at (615) 848-3200 and arrange a walk through of the system.
  - M. Failure to comply with any or all of the above guidelines puts your system in violation of the Policies and Procedures for using repurified water, and will result in termination of service until the appropriate corrective steps have been taken.

### ***6.11 Guidelines for Repurified Water Use in Irrigation***

The following guidelines have been established by the Murfreesboro Water & Sewer Department. They are intended to provide the basic parameters for the use of repurified **water in landscape irrigation**. To operate your system in compliance with these guidelines you must:

- A. **Irrigate between the hours of 9:00 p.m. and 6:00 a.m. only.** Watering outside this time frame must be done manually with qualified supervisory personnel on-site. No system shall at any time be left unattended during use outside the normal schedule.
- B. **Irrigate in a manner that will minimize runoff pooling and ponding.** The application rate shall not exceed the infiltration rate of the soil. Timers must be adjusted so as to be compatible with the lowest soil infiltration rate present. This procedure may be facilitated by the efficient scheduling of the automatic control clocks, (i.e., employing the repeat function to break up the total irrigation time into cycles that will promote maximum soil absorption).
- C. **Adjust spray heads to eliminate overspray** onto areas not under the control of the customer. For example, pool decks, private patios, streets and sidewalks.
- D. **Monitor and maintain the system to minimize equipment and material failure.** Broken sprinkler heads, leaks, unreliable valves, etc., should be repaired as soon as they become apparent.
- E. **Educate all maintenance personnel, on a continuous basis,** of the presence of repurified water, and the fact that it is not approved for drinking purposes. Given the high turnover rate of employees in the landscape industry, it is important that this information be disseminated on an almost daily basis. It is you, the landscape contractor, who is responsible for educating each and every one of your employees.
- F. **Obtain prior approval for all proposed changes and modifications to any on-site facilities.** Such changes must be submitted to, and approved by, the Department Engineering office and designed in accordance with Department standards. Failure to comply with any or all of the above guide-lines puts your system in violation of the Department's Policies and Procedures, and will result in termination of service until the appropriate corrective steps have been taken.

### **6.12 Repurified Water for Construction Grading, ETC.**

The following are MWSD procedures and guidelines for the specific use of repurified water for construction grading, dust control, compaction and temporary reservoirs. Repurified water is to be used **only for the above mentioned uses** and may not be used for any other purpose than stated above. There are **no exceptions**. If there is a need for water other than the above approved uses, i.e.: water to construction trailers, hand washes, hose bibs, and temporary sprinklers etc., one must obtain an approved potable connection from MWSD.

- (1) All construction connections shall be tagged with warning tags, as follows:  
 "Warning - Repurified Water, Do Not Drink" or "Warning - Reuse Water, Do Not Drink" and "Aviso Agua Impura, No Tomar" on the other side. Tags shall be affixed to stationary tanks, water trucks, and all service points or any other inlet or outlet using repurified water.
- (2) Water trucks, water tanks, or any other receptacle, including but not limited to pipe or hose used for storage or conveyance of repurified water, shall be dedicated solely to that use. Any use other than repurified water must be approved through MWSD and the cognizant health agencies.
- (3) No fittings, hose or pipe, or any other appurtenance using repurified water shall connect to a potable water source.

- (4) All PVC pipe extending from the point of connection shall be **purple, and read:** “Caution Repurified Water” or “Warning - Reuse Water, Do Not Drink” and “Aviso Agua Impura, No Tomar” on the other side. The PVC piping shall conform to all material specifications as set forth by MWSD.
- (5) Any water truck, water tank, or other storage receptacle to be converted from repurified water to potable water shall be thoroughly cleaned and disinfected to the satisfaction of MWSD and the cognizant health agencies.
- (6) Contact the MWSD Engineering Department prior to connection at (615) 848-3200 and arrange for an inspection to ensure compliance with Department standards.
- (7) Failure to comply with any or all of the above requirements places your construction site in violation of Department Policies and Procedures, and will result in termination of service until the appropriate corrective steps have been taken.

### ***6.13 Repurified Water For Full Yard Irrigation Of Residential Lots***

The following procedures are specific to design, approval, and use of repurified water for full yard irrigation of residential lots and are in addition to requirements for water use and repurified water facilities.

#### **6.13.1 General:**

If repurified water is to be used for full yard irrigation of residential lots, the facilities shall be constructed in accordance with the procedures and requirements set forth below:

- (1) The facilities constructed under this project are all “new” construction. No portion of this project constitutes the retrofitting of irrigation systems for repurified water use.
- (2) Individual Repurified water on-site facilities shall be designed, constructed and operated by the property owner or their agent. All of these facilities must be reviewed and approved by the Department prior to installation. Any revisions to the individual repurified water systems shall be reviewed and approved prior to start of construction.
- (3) Repurified water facilities are not available to the general public, but rather to a focused group of users who can be identified and communicated with effectively.
- (4) Detailed plans and specifications for the irrigation systems of each single family dwelling with full yard irrigation system where repurified water is proposed for use, shall be reviewed and approved by MWSD and inspected during construction to assure compliance.
- (5) From Section 6.15.3 of the Policies and Procedures, SPECIAL ON-SITE REPURIFIED WATER NOTES must appear on the submitted and signed irrigation design drawings. The design and installation will reflect all requirements from those notes.
- (6) No direct inter-connection between the potable water system and the repurified water system will be allowed.
- (7) Hose bibs on repurified water facilities are forbidden.
- (8) Repurified water will not be used for any other purpose except for irrigation.
- (9) The public water system will be protected by an appropriate backflow prevention assembly at the potable water meter. A Reduced Pressure Principle Device (RPPD) assembly will be required on each residential potable water meter where repurified water will be used for full yard irrigation.

- (10) All the piping system for the repurified water system will be constructed and maintained to be easily differentiated from the potable drinking water piping system. The piping systems will be of different pipe colors.
- (11) The repurified water system piping will be purple plastic pipe conforming to MWSD requirements and shall be clearly labeled.
- (12) **All exterior potable water lines** shall be in copper .
- (13) Approved warning labels shall be installed on all repurified water controller panels located at single-family residences.
- (14) Any outlets from the repurified water system shall not be accessible to the public and shall be clearly marked for worker protection.
- (15) No piping system used for conveying repurified water shall be converted to potable water without prior written approval from the Murfreesboro Water & Sewer Department.
- (16) For each single family dwelling full yard irrigation system provided with repurified water, Each single family dwelling shall enter into MWSD's standard repurified water service agreement which shall oblige the user to adhere to the operating procedures and responsibilities as defined herein. Each single family dwelling full yard irrigation system shall have designated a User Supervisor responsible for control of repurified water regulation requirements and cross-connections, typically the homeowner, but may be a member of the homeowner retained landscape maintenance company. The name of this person shall be provided upon request by MWSD to the State and County health agencies.
- (17) After activation of repurified water service, an initial cross-connection test and inspection of both the entire potable and full yard repurified water irrigation systems on the site will be conducted under the supervision of an AWWA Certified Cross-Connection Program Specialist employed by MWSD. **The initial activation will be supervised by the Murfreesboro Water & Sewer Dept.**

### **6.13.2 Initial Cross Connection Test For Individual Residential Lot Final Approval**

Notify in written form, the state and county health agencies of the initial test date with intent that both agencies will attend. For the initial cross-connection test, repurified water will be used for the irrigation piping system. The procedures for the initial cross-connection test shall be as follows:

- Verify that the repurified water system is under pressure and operating normally. This is done by manually operating each valve and quick coupler attached to the repurified water system.
- Shut down the repurified water system at the meter service connection.
- Verify that the repurified water system does not have any pressure. This is done by opening a valve downstream of the repurified water connection to relieve pressure, closing the valve, then manually operating each valve and any quick couplers attached to the repurified water system.
- Verify that the potable water system to the lot is under pressure and operating normally. This step is done while the repurified water system is shut off at the meter. The test is accomplished by manually operating all fixtures being supplied by the potable meter, both interior and exterior of the home.

- **Shut down the potable water system at the backflow** . Open the repurified system at the meter connection.
- Verify that the repurified water to the lot is under pressure and operating normally.
- Verify that the potable system does not have any pressure. **This is accomplished by opening a valve downstream of the potable water backflow to relieve pressure**, closing the valve, then manually operating all fixtures on the interior and exterior of the house being supplied by the potable water meter.
- **Open the potable water system at the backflow** . The test is now complete.

### 6.13.3 Annual Cross Connection Test For Individual Residential Lots

Annual testing for cross connections will be conducted on the repurified water system. Notify the state and county health agencies of the annual test date and again the subsequent outcome of the test(s). **The annual cross connection test shall in no case be less than 15 minutes and may be longer if site situations pose complications.** The procedures for the annual cross-connection test shall be as follows:

1. Verify the water system is under pressure and operating normally. This is done by manually operating a valve or quick coupler attached to the repurified water system.
2. Leaving the valve or quick coupler open and running while shutting down the repurified water meter at the service connection. The repurified water system will be drained and remain inactive for 15 minutes.
3. At the end of the 15 minute shut down period, verify that the pressure in the repurified water system has completely dissipated through the open valve or quick coupler. A cross-connection is detected if the pressure has not completely dissipated, and the valve at the service connection is not leaking.
4. Open the repurified water service connection if a cross-connection was not detected.
5. The potable water shall remain pressured at all times during the annual repurified water shut down.

### 6.13.4 User Supervisor

MWSD shall be kept informed of the identity of the person responsible for the water piping systems on all premises covered by these regulations. At each premise a “User Supervisor” shall be designated. This User Supervisor shall be responsible for the installation and use of pipelines and equipment and for the prevention of cross-connections. In the event of contamination or pollution of the potable water system due to a cross-connection on the premises, the local health officer and Department shall be promptly advised by the person responsible for the water system so that appropriate corrective measures may be taken.

#### (A) User Supervisor

If there is a non-resident owner, a local User Supervisor shall be appointed. For single-family residences which have a repurified water service connection, the owner shall be considered to be the “User Supervisor” unless otherwise indicated on the application for the service connection request. In the event that someone other than the owner is designated as the “User Supervisor” and this person is no longer associated with the property, the owner shall again be considered the “User Supervisor” until written notification is made to MWSD.

(B) Water Service Termination

When MWSD determines that water uses or conditions encountered by MWSD represent a clear and immediate hazard to MWSD's water supply that cannot be immediately abated, MWSD shall institute the procedure for discontinuing water use. Conditions or water uses that create a basis for water service termination shall include, but are not limited to, the following.

1. Refusal to install a required backflow prevention device.
2. Refusal to test a backflow prevention device.
3. Refusal to repair a faulty backflow prevention device.
4. Refusal to replace a faulty backflow prevention device.
5. Director or indirect connection between the potable water system and a sewer or repurified water system
6. Unprotected direct or indirect connection between the potable water system and a system or equipment containing contaminants.
7. Unprotected direct or indirect connection between the potable water system and an on-site auxiliary water system.
8. A situation which presents an immediate health hazard to the potable water system, as determined by the health agency or MWSD.
9. At single-family residences where copper piping is not installed for the water service or purple PVC pipe not meeting Department Procedural Guidelines and General Design Requirements is not installed for the repurified water service.
10. MWSD will terminate service to a customer's premise after written notices have been sent specifying the corrective action needed and the time period in which it must be completed. If no action is taken within the allowed time period, water service may be terminated. MWSD will make reasonable effort to advise the water user of intent to terminate water service. Then, MWSD will terminate the water service and lock the service valve in the closed position. Water service will not be reinstated until correction of all violations has been approved by MWSD. Failure to correct the violations may result in permanent termination of water service.



## **SECTION 7 DESIGN CRITERIA, CONSTRUCTION SITE RUNOFF**

### ***7.1 Erosion Prevention and Sediment Control (EPSC) Plan Overview***

Pursuant to State of Tennessee and federal National Pollutant Discharge Elimination System (NPDES) requirements, City Code Chapter 27½, Stormwater Management, sets forth a requirement that persons engaging in non-agricultural land disturbance prepare an Erosion Prevention and Sediment Control (EPSC) plan, apply for and obtain a Land Disturbance Permit from the City, and implement controls during construction. Elements of the Erosion Prevention and Sediment Control plan are outlined at City Code 27½-7(e).

The EPSC Plan is the primary tool for reducing erosion and preventing sediment loss from a construction site along with the control of construction related chemicals and wastes. The EPSC plan is substantively the same as an NPDES-required Storm Water Pollution Prevention Plan (SWPPP). The EPSC Plan/SWPPP (“Plan”) consists of a narrative and drawings of the existing conditions and control methods to be employed. The Plans shall be prepared by an individual with a background in hydrology or hydraulics and familiar with erosion and sediment control. It is recommended that a Certified Professional in Erosion and Sediment Control (CPESC) or qualified engineer or landscape architect prepare the Plan. Note that the State’s NPDES Construction General Permit requires that sediment basins be designed by a Professional Engineer registered in the State of Tennessee.

The EPSC Plan is typically prepared as part of the overall construction documents for the project. However, planning for proper erosion and sediment control should be considered from the earliest stages of project planning. For instance, planning the site layout to preserve riparian components and natural drainage features will contribute significantly to erosion and sediment control for the resultant project. In addition, consideration of project phasing and construction schedules is also an important factor in EPSC Plan design and implementation.

This chapter describes the methodology for preparing and assessing a storm water pollution prevention plan based on site conditions and sound erosion and sediment control practice. For projects requiring permit coverage, it is recommended that the storm water pollution prevention plan be developed in accordance with the methodology presented below and then checked for compliance with the State of Tennessee Construction General Permit.

### ***7.2 Erosion Prevention and Sediment Control Plan Design & Implementation Procedures***

For a single site or common plan of development in which one acre or more are disturbed, an EPSC Plan is required. The following outlines the primary steps required to prepare an effective storm water pollution prevention plan. Assessing the potential for

erosion and addressing all means possible to minimize erosion are necessary to minimize the production of sediment that might leave a site. In addition, reducing pollution from waste or chemicals used on the construction site must also be considered. This requires a deliberate, sequenced assessment that covers all aspects of the construction project.

The following general principles should be applied to the development of the EPSC Plan:

1. The native topsoil, and natural vegetation should be retained in an undisturbed state to the maximum extent practicable;
2. Limit the extent of clearing operations and phase construction operations;
3. Incorporate natural drainage features whenever possible, using adequate buffers and protecting areas where flow enters the drainage system;
4. Prevent pollutant release. Select erosion prevention Best Management Practices (BMPs) as a first line of defense. Prevent erosion rather than treat turbid runoff;
5. Select BMPs depending on site characteristics including topography, drainage area, flow conditions (channel, sheet, rill), soil type, ground cover, critical areas, and the construction plan;
6. Divert runoff away from exposed areas wherever possible and keep clean water clean;
7. Before reseeding a disturbed soil area, add approved soil amendments (compost, fertilizer, etc.) wherever topsoil has been removed;
8. Minimize slope length and steepness;
9. Reduce runoff velocities to prevent channel erosion;
10. Prevent the tracking of sediment off-site;
11. Select appropriate BMPs for the control of pollutants other than sediment;
12. Consider maintenance of BMPs.

The steps involved in developing an effective construction EPSC Plan include collection and analysis of physical site information and climate data followed by design and development of the narrative and drawing components of the EPSC Plan. The implementation phase involves installation of Best Management Practices, followed by inspection and maintenance of BMPs. Completion of a construction project requires establishment of ground cover on all remaining disturbed areas and removal of temporary BMPs.

The following methodology should be used to guide planning and design of construction BMPs.

### **7.2.1 Data Collection and Analysis**

Evaluate existing site conditions and gather information that will help develop the most effective construction EPSC Plan. The information gathered should be documented and explained in the narrative and/or shown on the drawings as appropriate. Guidelines for analysis of the various site conditions are described below:

Topography: Prepare a topographic drawing of the site to show the existing contour elevations at intervals of 1 or 2 feet depending upon the slope of terrain. The primary topographic considerations are slope steepness and slope length. Because of the effect of runoff, the longer and steeper the slope, the greater the erosion potential.

Drainage: Locate and clearly mark existing drainage swales and patterns on the drawing, including existing storm drain pipe systems. Natural drainage patterns that consist of overland flow, swales and depressions should be used to convey runoff through the site to avoid constructing an artificial drainage system. Care should be taken to ensure that increased runoff from the site will not erode or flood the existing natural drainage system. Possible sites for temporary storm water retention and detention should be considered at this point. Identify the need for man-made ditches or drainage features, if necessary, to supplement natural drainage. Preserve natural drainage patterns on the site to the greatest extent practicable.

Soils: Identify and label soil type(s) and erodibility (low, medium, high or an index value from the county Natural Resource Conservation Service (NRCS) soil survey) on the drawing. If a soil survey is not available, a request can be made to a district NRCS Office. A field visit of the site should also be conducted to verify the soil types and to identify any unique site characteristics that may not be shown on the soil survey. Develop the construction EPSC Plan based on known soil characteristics.

Ground Cover: Label existing vegetation on the drawing. Such features as tree clusters, grassy areas, and unique or sensitive vegetation should be shown. Unique vegetation may include existing trees above a given diameter. Local requirements regarding tree preservation should be investigated through the City Horticulturalist at (615) 895-8059. In addition, existing denuded or exposed soil areas should be indicated. Ground cover is the most important factor in terms of preventing erosion. Existing vegetation that can be saved will prevent erosion better than constructed BMPs. Trees and other vegetation protect the soil structure. If the existing vegetation cannot be saved, employ such practices as phasing construction, temporary seeding, and mulching. Phasing of construction involves stabilizing one part of the site before disturbing another. In this way, the entire site is not disturbed at once.

Critical Areas: Delineate critical areas adjacent to or within the site on the drawing. Such features as steep slopes, streams, floodplains, flood hazard areas, lakes, wetlands, etc., should be shown. Delineate setbacks and stream and wetland buffer limits for these features on the drawings. The City's stream buffer requirements, known as Water Quality Protection Areas (WQPA), may be found at City Code 27½-17 *et seq.* Other related jurisdictional boundaries such as the Federal Emergency Management Agency (FEMA) base floodplain should also be shown on the drawings. Any critical areas within or adjacent to the development should exert a strong influence on land development decisions. Critical areas and their buffers should be delineated on the drawings and clearly flagged in the field. Chain link fencing may be more useful than flagging to assure that equipment operators stay out of critical areas. Only unavoidable work should take place within critical areas and their buffers.

Adjacent Areas: Consider existing buildings, roads, and facilities adjacent to or within the project. Water bodies that will receive direct runoff from the site are a major concern. The types and sensitivities of adjacent areas and risks to downstream properties, storm water facilities, or public infrastructure should be evaluated. Erosion and sediment controls should be selected accordingly.

Existing Encumbrances: Identify wells, existing and abandoned septic drainfields, utilities, and site constraints.

Precipitation Records: Determine the average monthly rainfall and rainfall intensity for the required design storm events. Intensity - Duration - Frequency rainfall data for the

Middle Tennessee region and should be used for all hydrologic analysis at the construction location.

**Timing of the Project:** An important consideration in selecting BMPs is the timing and duration of the project. Projects that will proceed during rainy periods and projects that will last through several seasons must plan accordingly.

## **7.2.2 Construction SWPPP Development**

After collecting and analyzing the data to determine the site limitations, the designer can then develop the appropriate narrative and drawing components of the construction EPSC Plan. The steps outlined in the **Ten Elements of a construction EPSC Plan** described below present a logical sequence for preparing a comprehensive storm water pollution plan based on the site conditions and sound erosion and sediment control practice.

The **Ten Elements of a construction EPSC Plan** are intended to encompass the requirements of the City Land Disturbance Permit and the Tennessee NPDES Construction General Permit regarding contents of an erosion, sediment and waste control plan, although the terminology and organization is not taken directly from the permits. For projects requiring permit coverage, the storm water pollution prevention plan should be developed in accordance with the Ten Elements and then checked for compliance with the Construction General Permit. Appendix B contains EPSC Plan development guidelines that incorporate the Ten Elements along with the provisions of the TPDES Construction General Permit.

Each of the following **Ten Elements of a construction SWPPP** must be considered and included in the EPSC Plan, unless site conditions render the step unnecessary. Where it is determined that one or more of the Ten Elements is not warranted for a particular project, the exemption from the element(s) must be clearly justified in the narrative of the EPSC Plan. The minimum design storm to be used in the selection and utilization of specific controls is the 2-year, 24 hour storm event. For sediment traps and basins, the minimum design storm to be used is the 2-year, 24 hour duration storm event; and for basins on sites identified to be on *impaired* waters, the design storm is, per State requirements, a 5-year, 24 hour storm.

### **1. Limit Soil Disturbance**

- A. Clearly establish on the plans clearing limits, and provide a description of critical areas, natural drainage features, trees and other vegetation, and appropriate buffers that are to be preserved within the construction area.
- B. Plastic, metal, or stake wire fence may be designated on the plans for marking the clearing limits in the field.

### **2. Prevent Soil Erosion**

- A. Exposed soils should be stabilized by application of effective BMPs that protect the soil from the erosive forces of raindrops, flowing water, and wind.
- B. Applicable practices include, but are not limited to, temporary and permanent vegetation (seeding/sodding), dry mulching, hydro-mulching, plastic covering, erosion control fabrics and matting, the early application of gravel base on areas to be paved, and dust control.

- C. Selected soil stabilization measures should be appropriate for the time of year, site conditions, and estimated duration of use.
- D. Soil stockpiles must be stabilized and protected with sediment trapping measures.
- E. Linear construction activities such as right-of-way and easement clearing, roadway development, pipelines, and trenching for utilities, should be conducted to meet the soil stabilization requirement. Contractors should install bedding materials, roadbeds, structures, pipelines, or utilities and re-stabilize the disturbed soils to limit disturbed soil.

### **3. Protect Slopes**

- A. Design and phase cut and fill slopes in a manner that will minimize erosion.
- B. Reduce slope runoff velocities by reducing continuous length of slope with terracing and diversions reduce slope steepness and roughen slope surface.
- C. Divert upslope drainage and run-on waters with interceptors at top of slope. Storm water from offsite should be handled separately from storm water generated on the site. Diversion of off-site storm water around the site may be a viable option. Diverted flows should be redirected to the natural drainage location at or before the property boundary.
- D. Contain collected flows in pipes, slope drains, or protected channels. Check dams should be used within channels that are cut down a slope.
- E. Excavated material should be placed on the uphill side of trenches, consistent with the safety and space considerations.
- F. Stabilize soils on slopes.

### **4. Minimize Sediment Loss from Site**

- A. The native topsoil and natural vegetation should be retained in an undisturbed state to the maximum extent practicable.
- B. Prior to flowing off a construction site, storm water runoff from disturbed area should pass through a sediment trap, sediment basin or other appropriate sediment removal control.
- C. BMPs intended to trap sediment onsite such as sediment basins should be designated for installation as one of the first steps in the construction process. The BMPs should be functional before other land disturbing activities take place.
- D. The State's Construction General Permit requires a temporary or permanent sediment basin for common drainage locations that serve an area with 10 or more acres disturbed at a time; five acres where discharge to *impaired* waters is indicated; other, equivalent measures may be proposed where a basin is impracticable.
- E. Disturbed areas and vehicle paths should be treated appropriately to reduce generation of dust.

### **5. Control Flow Rates & Stabilize Channels/Outfalls**

- A. Properties and waterways downstream from development sites should be protected from erosion resulting from increases in the volume, velocity, and peak flow rate of storm water runoff from the project site.
- B. Downstream analysis is necessary if changes in volume and rate of discharge from a site could impair or alter downstream conveyance systems, stream banks, bed sediment, or aquatic habitat.

- C. Temporary on-site conveyance channels should be designed to prevent erosion from the expected flow velocity of a 2-year storm event for the developed condition.
- D. Stabilization to prevent erosion of channels, drainage ways, stream banks, outlets, and downstream reaches should be specified on the EPSC Plan.

#### **6. Establish Construction Access**

- A. Construction vehicle access and exit should be limited to one route, if possible, or two for linear projects.
- B. Access points should be stabilized with clean, crushed rock (TDOT #1 or #2 stone; cf. ASTM D448 No. 1 stone; 1½-3½ inch diameter) to minimize the tracking of sediment onto public roads. Reference the State of Tennessee Sediment and Erosion Control Handbook at [http://www.state.tn.us/environment/wpc/sed\\_ero\\_controlhandbook/](http://www.state.tn.us/environment/wpc/sed_ero_controlhandbook/).
- C. Wheel wash or tire baths should be located on site.
- D. Include a note similar to the following: “Roads should be cleaned thoroughly at the end of each day. Sediment should be removed from roads by shoveling or pickup sweeping and transported to a controlled sediment disposal area. Street washing should be accomplished only after sediment is removed in this manner.”

#### **7. Protect Drain Inlets**

- A. Storm drain inlets operable during construction (both existing and new) should be protected so that storm water runoff does not enter the conveyance system without first being filtered or treated to remove sediment. The protection afforded storm drain inlets should not be considered primary sediment control devices. The intent should be to prevent sediment from arriving at the inlet. Inlet protection represents a “last line of defense” for those cases where other erosion and sediment control measures have been bypassed on a temporary basis.
- B. Special caution must be exercised when installing inlet protection on publicly traveled streets or in developed areas. Ensure that inlet protection is properly designed, installed and maintained to avoid flooding of the roadway or adjacent properties and structures. In such areas, if flooding threatens property damage, inlet protection should be removed and increased street-sweeping and/or more intensive on-site controls used to keep soil on-site and out of streets.
- C. Approach roads should be kept clean. Sediment and street wash water should not be allowed to enter storm drains without prior and adequate treatment unless treatment is provided before the storm drain discharges to waters of the state.
- D. Specify that inlets should be routinely inspected on a weekly basis and immediately following storm events. Inlet protection devices should be cleaned or removed and replaced when sediment reaches one-half the height of the protection device.

#### **8. Control Dewatering**

- A. Foundation, vault, and trench dewatering water should be regarded as storm water runoff and treated accordingly. The preferred method of treatment is discharge to a grassy swale and routing to a sedimentation basin, if the water is not clear.
- B. Highly turbid dewatering water from clamshell digging, concrete tremie pour, or work inside the cofferdam should be handled separately from storm water. Small volumes should be filtered by use of a sedimentation bag and then released to grassy areas may be treated as described above. Disposal may require transport offsite in vehicle, such

as vacuum flush truck or temporary sediment tank, for legal disposal in a manner that does not pollute state waters.

## **9. Control Waste and Pollutants**

- A. All pollutants, including waste materials and demolition debris, that occur onsite during construction should be handled and disposed of in a manner that does not cause contamination of storm water. Woody debris may be chopped and spread onsite as mulch.
- B. Cover, containment, and protection from vandalism should be provided for all chemicals, liquid products, petroleum products, and non-inert wastes present on the site.
- C. Maintenance and repair of heavy equipment and vehicles involving oil changes, hydraulic system drain down, solvent and de-greasing cleaning operations, fuel tank drain down and removal, and other activities which may result in discharge or spillage of pollutants to the ground or into storm water runoff must be conducted using spill prevention measures, such as drip pans. Contaminated surfaces should be cleaned immediately following any discharge or spill incident. Emergency repairs may be performed onsite using temporary plastic placed beneath and, if raining, over the vehicle.
- D. Application of agricultural chemicals, including fertilizers and pesticides should be conducted in a manner and at application rates that will not result in loss of chemical to storm water runoff. Manufacturers' recommendations for application rates and procedures should be followed.
- E. BMPs should be used to prevent or treat contamination of storm water runoff by pH modifying sources. These sources include bulk cement, cement kiln dust, fly ash, new concrete washing and curing waters, waste stream generated from concrete grinding and sawing, exposed aggregate processes, and concrete pumping and mixture washout waters. Storm water discharges should not cause a violation of the water quality standard for pH in the receiving water (Rules of the Tennessee Department of Environment and Conservation, Chapter 1200-4-3, may be found at <http://www.state.tn.us/sos/rules/1200/1200-04/1200-04-03.pdf>.)

## **10. Construction Phasing and Project Management**

- A. Development projects should be phased where feasible in order to prevent, to the maximum extent practicable, the transport of sediment from the development site during construction. Revegetation of exposed areas and maintenance of that vegetation should be an integral part of the clearing activities for any phase.
- B. Clearing and grading activities for developments should proceed only after one has obtained the City's Land Disturbance Permit and City-approved construction plans (e.g., subdivision approval) that establishes permitted areas of clearing, grading, cutting, and filling. When establishing these permitted clearing and grading areas, consideration should be given to minimizing and removal of existing trees and minimizing disturbance and compaction of native soils except as needed for building purposes. These permitted clearing and grading areas and any other areas required to preserve critical or sensitive areas, buffers, native growth protection easements, or tree retention areas, should be delineated on the site plans and the development site.

### **7.2.3 Installation of BMPs and SWPPP Implementation**

Many provisions of the storm water pollution prevention plan must be implemented prior to the start of construction. Implementation should follow a logical order depending on the site. A typical sequence might involve marking clearing limits, installing construction access, stabilizing outfalls, and installing designated sediment removal BMPs prior to the beginning of earth disturbing activities. In areas with existing storm drain systems, inlet protection should also be conducted at the initial stages of construction. As areas are disturbed during construction, implementation of erosion prevention (soil stabilization) and slope protection measures must be implemented. Pollution prevention measures for waste and other potential pollutants must be implemented throughout the construction process. Procedures for handling dewatering waters should be used as necessary. The EPSC Plan should be considered a “living document.” As the construction site changes during the different stages or phases of the project, the Plan must be assessed and modified as necessary to ensure the continued effectiveness of the plan. The project manager, engineer, or authorized representative must indicate changes on plans in ink (red ink preferred) along with a brief reason for the modification and date of modification. BMPs must then be added or modified in accordance with EPSC Plan changes.

### **7.3 Maintenance of BMPs**

1. All BMPs should be inspected, maintained, and repaired as needed to assure continued performance of their intended function.
2. Sediment should be removed from the controls and damaged controls should be repaired as soon as site conditions allow following discovery.
3. Locations where vehicles enter or exit the site should be inspected for evidence of off-site tracking. Paved surfaces should be kept clean. Priority should be accorded those areas that drain directly to streams and drainage ways, followed by areas around devices protecting storm sewer inlets.
4. Temporary and permanent erosion and sediment control BMPs should be maintained and repaired as needed to assure continued performance of their intended function. Materials must be repaired or replaced and accumulated silt and sediment must be removed as necessary to ensure continued performance. Devices that are continually damaged may indicate the need for additional or alternate devices.
5. The influence of seasonal rainfall variations may necessitate continued adjustment of the frequency of maintenance. The sediment removed from the devices should be properly disposed into controlled areas and prevented from returning to the control device upon subsequent rain events.
6. Onsite and offsite construction support activities including borrow areas, waste areas, contractor work areas, and material storage areas and dedicated concrete or asphalt batch plants must also be routinely inspected and maintenance performed on BMPs as necessary.
7. Whenever inspection reveals that the BMPs identified in the construction EPSC Plan are inadequate, the EPSC Plan must be modified accordingly in a timely manner. BMPs must then be added or modified in accordance with EPSC Plan changes.

# SECTION 8 DESIGN CRITERIA, POST-CONSTRUCTION RUNOFF

## 8.1 Overview

Pursuant to State of Tennessee and federal National Pollutant Discharge Elimination System (NPDES) requirements, City Code Chapter 27½, Stormwater Management, the City of Murfreesboro has implemented post-construction storm water quality standards. These standards apply to all areas of new development and redevelopment and are intended to reduce the amount of suspended solids present in post-construction runoff.

The post-construction performance standards are as follows:

1. Reduce total suspended solids (TSS) by 80% in the water quality volume (WQv). The water quality volume is determined by the total runoff generated from a site when experiencing a 1.2 inch rain event over a 24 hour period.
2. Provide extended detention over a 48 to 72 hour period for the streambank protection volume (SPv). The streambank protection volume is determined by the total runoff generated from a site when experiencing a 3.1 inch rain event over a 24 hour period.

Developers will achieve the storm water management goal by way of good site planning and design and use of selected or proven storm water controls. For more information, reference the City's Stormwater Planning, Low Impact Design Guid and Stormwater Controls Manual located on the Department's website.

## 8.2 Stormwater Utility

The City has established a stormwater utility, utilizing imperviousness as the determining parameter for contribution to stormwater quantity and degradation of stormwater quality on the City of Murfreesboro's stormwater conveyance system.

The City has also adopted a Credits and Appeals Policy for use in conjunction with the assessment of the fees associated with the stormwater utility. All non-residential and multi-family (triplex and above) are afforded opportunities to receive a discounted stormwater utility fee if certain post-construction best management practices are utilized in treating stormwater runoff. An application must be provided for credits to be applied. See Figure 21. for the application associated with receiving a stormwater utility fee credit.

### 8.2.1 Residential

Residential tracts are viewed as one (1) single family unit with a median imperviousness of 3,470 square feet. No individual assessment of imperviousness will be performed on each residential lot.

Residential developments will be subject to all applicable Murfreesboro City Code, including but not limited to the Construction Site Runoff Ordinance and Water Quality

Protection Area Ordinance. Residential subdivisions are also regulated under the City's Post -construction runoff ordinance contained in Chapter 27 ½ of the City Code.

Individual residential lots will not be subject the post-construction runoff ordinance, and shall not be afforded credit opportunities on the stormwater utility fee. However, common areas managed by a homeowners' association shall be viewed as a non-residential tract and may be applicable to receive stormwater utility fee credits.

### **8.2.2 Non-Residential & Multi-family Residential**

Non-residential developments, primarily commercial, industrial or institutional, as well as, multi-family residential (e.g., apartments) are assessed on an equivalent single family unit basis, whereas the impervious area of each individual tract of development will be calculated and then divided by 3,470 square feet to determine the single family unit equivalents. These sites will be subject to all applicable Murfreesboro City Codes, including the Construction Site Runoff Ordinance, the Water Quality Protection Area Ordinance and the required, forthcoming Post Construction Runoff Ordinance.

While adherence to the Post Construction Runoff Ordinance will be required by these developments, the City of Murfreesboro intends to offer credits for integrating Best Management Practices (BMP's) that are proven to remove pollutants from stormwater runoff and aid in streambank protection and flood control.

### **8.3 Five (5) Principles of Storm Water Management Site Planning**

As discussed in a previous section, the following principles should be kept in mind during all steps of preparing an stormwater Site Plan for a development site:

1. The site design should utilize an integrated approach to deal with storm water quality protection, streambank protection and flood control requirements.
2. Storm water management practices should strive to utilize the natural drainage system and require as little maintenance as possible.
3. Structural storm water controls should be implemented only after all site design and nonstructural options have been exhausted.
4. Structural storm water solutions should attempt to be multi-purpose and be aesthetically integrated into a site's design.
5. "One size does not fit all" in terms of storm water management solutions.

## **8.4 Stormwater Site Design Practices**

### **8.4.1 Introduction**

The first step in addressing storm water management begins with the site planning and design process. Development projects can be designed to reduce their impact on watersheds when careful efforts are made to conserve natural areas, reduce impervious cover, and better integrate storm water treatment. By implementing a combination of these nonstructural approaches collectively, it is possible to reduce the amount of runoff and pollutants that are generated from a site and provide for some nonstructural on-site treatment and control of runoff. The goals of stormwater site design include:

1. Managing storm water (quantity and quality) as close to the point of origin as possible and minimizing collection and conveyance
2. Preventing storm water impacts rather than mitigating them
3. Utilizing simple, nonstructural methods for storm water management that are lower cost and lower maintenance than structural controls
4. Creating a multifunctional landscape
5. Using hydrology as a framework for site design
6. Reducing the peak runoff rates and volumes, therefore, reducing the size and cost of drainage infrastructure and structural storm water controls

Stormwater site design for storm water management includes a number of site design techniques such as preserving natural features and resources, effectively laying out the site elements to reduce impact, reducing the amount of impervious surfaces, and utilizing natural features on the site for storm water management. The aim is to reduce the environmental impact “footprint” of the site while retaining and enhancing the owner/developer’s purpose and vision for the site. Many of the stormwater site design practices can reduce the cost of infrastructure while maintaining or even increasing the value of the property.

Reduction of adverse storm water runoff impacts through the use of stormwater site design should be the first consideration of the design engineer. Operationally, economically, and aesthetically, the use of stormwater site design practices offers significant benefits over treating and controlling runoff downstream. Therefore, all opportunities for using these methods should be explored and all options exhausted before considering structural storm water controls.

The reduction in runoff and pollutants using stormwater site design can reduce the required runoff peak and volumes that need to be conveyed and controlled on a site and, therefore, the size and cost of necessary drainage infrastructure and structural storm water controls. In some cases, the use of stormwater site design practices may eliminate the need for structural controls entirely. Hence, stormwater site design practices can be viewed as both a water quantity and water quality management tool.

Several of the site design practices described in this section provide a calculable reduction in the volume requirements for Water Quality Protection. Section 1.2.2.2 of the Murfreesboro Stormwater Planning, Low Impact Design and Credit Guide discusses these reduction opportunities and provides examples of their application.

The use of stormwater site design can also have a number of other ancillary benefits including:

1. Reduced construction costs
2. Increased property values
3. More open space for recreation
4. More pedestrian friendly neighborhoods
5. Protection of sensitive forests, wetlands, and habitats
6. More aesthetically pleasing and naturally attractive landscape
6. Easier compliance with wetland and other resource protection regulations

## **8.4.2 List of Stormwater Site Design Practices and Techniques**

The stormwater site design practices and techniques covered in this manual are grouped into four categories and are listed below:

1. Conservation of Natural Features and Resources
2. Preserve Undisturbed Natural Areas
3. Preserve Riparian Buffers
4. Avoid Floodplains
5. Avoid Steep Slopes
6. Minimize Siting on Porous or Erodible Soils
7. Lower Impact Site Design Techniques
8. Fit Design to the Terrain
9. Locate Development in Less Sensitive Areas
10. Reduce Limits of Clearing and Grading
11. Utilize Open Space Development
12. Consider Creative Designs
13. Reduction of Impervious Cover
14. Reduce Roadway Lengths and Widths
15. Reduce Building Footprints
16. Reduce the Parking Footprint
17. Reduce Setbacks and Frontages
18. Use Fewer or Alternative Cul-de-Sacs
19. Create Parking Lot Storm Water "Islands"
20. Utilization of Natural Features for Storm Water Management
21. Use Buffers and Undisturbed Areas
22. Use Natural Drainageways Instead of Storm Sewers
23. Use Vegetated Swale Instead of Curb and Gutter
24. Drain Rooftop Runoff to Pervious Areas

## **8.4.3 Using Stormwater Site Design Practices**

Site design should be done in unison with the design and layout of storm water infrastructure in attaining storm water management goals. Figure 1.3.1-1 illustrates the stormwater site design process that utilizes the four stormwater site design categories.



The first step in stormwater site design involves identifying significant natural features and resources on a site such as undisturbed forest areas, stream buffers and steep slopes that should be preserved to retain some of the original hydrologic function of the site.

Next, the site layout is designed such that these conservation areas are preserved and the impact of the development is minimized. A number of techniques can then be used to reduce the overall imperviousness of the development site.

Finally, natural features and conservation areas can be utilized to serve storm water quantity and quality management purposes.

## **8.5 Suitability of Storm Water Controls to Meet Storm Water Management Goals**

Category	On-Site Storm Water Controls	Water Quality Protection	Streambank Protection	On-Site Flood Control	Downstream Flood Control
Bioretention Areas	Bioretention Areas	<b>P</b>	<b>S</b>	-	-
Channels	Enhanced Swales	<b>P</b>	<b>S</b>	<b>S</b>	<b>S</b>
	Channels, Grass	<b>S</b>	<b>S</b>	<b>P</b>	-
	Channels, Open	-	-	<b>P</b>	<b>S</b>
Chemical Treatment	Alum Treatment System	<b>S</b>	-	-	-
Conveyance Components	Culverts	-	-	<b>P</b>	<b>S</b>
	Energy Dissipation	-	<b>P</b>	<b>S</b>	<b>S</b>
	Inlets/Street Gutters	-	-	<b>P</b>	-
	Pipe Systems	-	<b>P</b>	<b>P</b>	<b>S</b>
Detention	Detention, Dry	<b>S</b>	<b>P</b>	<b>P</b>	<b>P</b>
	Detention, Extended Dry	<b>S</b>	<b>P</b>	<b>P</b>	<b>P</b>
	Detention, Multi-purpose Areas	<b>S</b>	<b>P</b>	<b>P</b>	<b>P</b>
	Detention, Underground	<b>S</b>	<b>P</b>	<b>P</b>	<b>P</b>
Filtration	Filter Strips	<b>S</b>	-	-	-
	Organic Filters	<b>P</b>	-	-	-
	Planter Boxes	<b>P</b>	-	-	-
	Sand Filters, Surface/Perimeter	<b>P</b>	<b>S</b>	-	-
	Sand Filters, Underground	<b>S</b>	-	-	-
Hydrodynamic Devices	Gravity (Oil-Grit) Separator	<b>S</b>	-	-	-
Infiltration	Downspout Drywell	<b>P</b>	-	-	-
	Infiltration Trenches	<b>P</b>	<b>S</b>	-	-
	Soakage Trenches	<b>P</b>	-	-	-
Ponds	Ponds, Storm Water	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>
Porous Surfaces	Green Roof	<b>P</b>	<b>S</b>	-	-
	Modular Porous Paver Systems	<b>S</b>	<b>S</b>	-	-
	Porous Concrete	<b>S</b>	<b>S</b>	-	-
Proprietary Systems	Proprietary Systems *	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>
Re-Use	Rain Barrels	<b>P</b>	-	-	-
Wetlands	Wetlands, Storm Water	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>
	Wetlands, Submerged Gravel	<b>P</b>	<b>P</b>	<b>S</b>	-

<b>P</b>	=	<b>Primary Control:</b> Able to meet design criterion if properly designed, constructed and maintained.
<b>S</b>	=	<b>Secondary Control:</b> May partially meet design criteria. May be a Primary Control but designated as a Secondary due to other considerations. For Water Quality Protection, recommended for limited use in approved community-designated areas.
-	=	Not typically used or able to meet design criterion.
*	=	The application and performance of proprietary commercial devices and systems must be provided by the manufacturer and should be verified by independent third-party sources and data.

## **8.6 Maintenance of Post-Construction BMP's**

The design and planning of all stormwater management facilities (e.g., post-construction BMP's) shall include detailed maintenance and repair procedures to ensure their continued performance. These plans will identify the parts or components of a stormwater management facility that need to be maintained and the equipment and skills or training necessary. Provisions for the periodic review and evaluation of the effectiveness of the maintenance program and the need for revisions or additional maintenance procedures shall be included in the plan. The plan may, at City's option, require the owner to file periodic inspection reports or certification that the required maintenance and repairs have been performed and that the facility is functioning as initially designed and installed. A location map of all stormwater management BMP's with a permanent elevation benchmark shall be submitted to assist in the periodic inspection of the facility.

The applicant must ensure access to the site for the purpose of inspection and repair by securing all the maintenance easements needed. These easements must be binding on the current property owner and all subsequent owners of the property and must be properly recorded in the office of the Register of Deeds. The City shall perform maintenance inspections at reasonable times (between 8:00 a.m. and 4:30 p.m., Monday through Friday), and with the Owner, or agent of the Owner, if available. Periodic inspections may be conducted after storms producing high rates of runoff. Whenever possible, the City may notify the Owner prior to entering the property.

The maintenance responsibilities for permanent stormwater runoff control facilities shall be determined based upon the type of ownership of the property which is controlled by the facilities. Where the permanent stormwater runoff control facilities are designed to manage runoff from property in a single entity ownership as defined below, the maintenance responsibility for the stormwater control facilities shall be with the single entity owner. The stated responsibilities of the entity in terms of owning and maintaining the facilities shall be submitted with the stormwater management plan for determination of their adequacy. Approval of the stormwater management plan shall be conditioned upon the approval of these terms. These terms shall be in writing, shall be in recordable form (see **Exhibit "B" to Figure 7; MWSD's Standard Development Contract**), and shall, in addition to any other terms deemed necessary by the City, and shall contain a provision permitting inspection at any reasonable time by the City.

A single entity shall be defined as an individual, an association, public or private corporation, partnership firm, trust, estate or any other legal entity allowed to own real estate. Unless made specifically clear in the preliminary stages of the stormwater management plan review, it will be assumed that all stormwater detention, retention, treatment or storage facilities and/or devices shall be operated and maintained by a single entity as defined above. Where the City has explicitly and in writing accepted an offer of dedication of the permanent stormwater management facilities, the City shall be responsible for maintenance.

The following plat notation shall be placed on all final plats for properties having a stormwater maintenance agreement recorded with the property and a stormwater maintenance plan filed with the Murfreesboro Water & Sewer Department.

**Notation of Post-Construction Best Management Practices** – *“This site contains post-construction best management practices utilized in treating stormwater runoff in order to comply with Murfreesboro City Code Chapter 27 ½. A stormwater maintenance agreement is recorded with this property and obligates all subsequent owners to adhere to the stormwater maintenance plan on file with the City of Murfreesboro.”*

The above referenced maintenance plan and agreement, and construction certification must be submitted prior to MWSD granting approvals for the various stages of development according to the following table. Note that the table also lists the times at which the stormwater concept plan and the stormwater quality design calculations are required during the development process.

Info./documents	Referenced information/document should be submitted prior to or with:			
	For residential s/division	For commercial subdivision	For site development	For public works
Stormwater mgt. concept plan	Master plan	Master plan	Site plan	Initial plans
S/water quality design and calculations.	Stormwater mgt. plan/construction plans	Stormwater mgt. plan/construction plans	Site plan	Final plan review
S/water Mgt Record Sheet	Stormwater mgt. plan/construction plans	Stormwater mgt. plan/construction plans	Site plan	Final plan review
Maintenance Agreement	Final plat	Final plat*	Building permit*	Acceptance by City
Maintenance plan	Final plat	Final plat*	Building permit*	Acceptance by City
Construction certification	Certificate of Occupancy	Certificate of Occupancy	Certificate of Occupancy	Project acceptance
* The City will normally allow quantity & quality controls to be included within a common area of a commercial subdivision. Where quality and/or quantity controls are not provided in a common area, they will need to be provided at the site level.				

**Figure 21**

**City of Murfreesboro Stormwater User Fee  
Application for Reduction of Fee (Credit)**

The purpose of this form is for one to apply to the City of Murfreesboro for a reduction in the storm water user fee that has been applied to your property. Submitting all the requested information, in good order, will help the City expedite your request. Submit this application with supporting documentation as necessary to Stormwater Coordinator, Murfreesboro Water and Sewer Department, 220 NW Broad Street, Murfreesboro, TN 37220.

**Applicant Information**

Name:		
Address:		
City:	State:	Zip Code:
Contact Person:		
e-mail Address:	Phone No.:	
Property address from bill:		
Water Meter or Account No.:		

**My request for reduction of fee is based on the following types of storm water controls (check all that apply):**

- |  |  |
|--|--|
| <input type="checkbox"/> Quantity Control, 1-yr storm    | <input type="checkbox"/> Quality Control, TSS reduction                |
| <input type="checkbox"/> Quantity Control, flood control | <input type="checkbox"/> Quality Control, NPDES stormwater permit/NOEX |
| <input type="checkbox"/> Education Credit                |  |

**Brief description of stormwater management and control facilities submitted as basis for requesting credit:**


**Applicant/Owner Certification** *(signature by proprietor, president, vice-president, or agency department head)*  
*The above information is true and correct to the best of my knowledge and belief. I agree to provide corrected information should there be any future change in the information provided herein.*

Type or print name	Title or Authority
Signature	Date

**Official Use**

<b>Quality Credit</b>	<b>%</b>	<b>Notes:</b>	<b>Assessed Fee: \$</b>
<b>Quantity Credit</b>	%		
<b>Education Credit</b>	%		<b>Reduced Fee: \$</b>
<b>NPDES Credit</b>	%		
<b>Total Credit:</b>	<b>%</b>		<b>Date</b>

## City of Murfreesboro Stormwater Utility Credit Worksheet

Applicant: .....

Property Address: .....

Complete the appropriate sections below, according to the type(s) of credit you are requesting.

### Quantity-Based Credit

<input type="checkbox"/>	<input type="checkbox"/> Check information submitted with application. All items requested.
<input type="checkbox"/>	Location map
<input type="checkbox"/>	Engineering drawings of quantity control structures
<input type="checkbox"/>	Watershed breaks across property and layout of impervious surfaces
<input type="checkbox"/>	Location of quantity controls (label controls if more than one)
<input type="checkbox"/>	Brief description of control:
<input type="checkbox"/>	Site photographs attached
<input type="checkbox"/>	Describe condition of facility: <input type="checkbox"/> excellent <input type="checkbox"/> good <input type="checkbox"/> fair <input type="checkbox"/> poor Needs repair as follows:
<input type="checkbox"/>	Maintenance plan (attach) (See <a href="#">Planning and Design Guide, Appendix C, Worksheets/Checklists.</a> )
<input type="checkbox"/>	Off-site drainage contribution ( may not be applicable; if applicable, show area on map)

### Stormwater runoff calculations for quantity-based credit (add tables for modeling more than one basin)

	Pre-development discharge	Post-development discharge
Basin #		
Total drainage area:		
Time of Concentration:		
Curve Number:		
Hydrograph		
1-yr. or 2-yr, 24 hour *		
10-yr., 24 hour		
25-yr., 24 hour		
50 yr., 24 hour		
100 yr., 24 hour		
Method of calculations		

\* 1-year, 24 hour storm control is the basis of the streambank protection volume credit (25%). Additional credit may be granted for greater peak discharge reduction. Ideally, data should show 24 hour detention of centroid of inflow and outflow hydrographs; or, 24 hour time from last drop of inflow to basin to last drop of flow out of basin.

### Storage volumes (as applicable)

Rain garden		Underground detent.	
Pervious concrete		Pond or basin	
Bioretention		Other	
Total		Total	

## Quality-Based Credit

	<input type="checkbox"/> Check information submitted with application. All items requested.
<input type="checkbox"/>	Location map
<input type="checkbox"/>	Engineering drawings of quality control structures
<input type="checkbox"/>	Watershed breaks across property and layout of impervious surfaces
<input type="checkbox"/>	Location of quality controls (label controls if more than one)
<input type="checkbox"/>	Brief description of control(s): ..... Refer to City's Storm Water Controls Manual for pollution reduction benefits of various types of controls.
<input type="checkbox"/>	Site photographs
<input type="checkbox"/>	Describe condition of facility: <input type="checkbox"/> excellent <input type="checkbox"/> good <input type="checkbox"/> fair <input type="checkbox"/> poor Needs repair as follows:
<input type="checkbox"/>	Off-site drainage contribution ( may not be applicable; if applicable, show area on map)
<input type="checkbox"/>	Maintenance plan (attach) (See <a href="#">Planning and Design Guide, Appendix C, Worksheets/Checklists.</a> )

### Calculations for Stormwater Quality Credit

Drainage area no.	Water Quality Volume *	Water Quality Control system*	Suspended Solids Reduction	

\* See Planning, LID and Control Guide, section 1.2.2.1 Water Quality Protection Volume for reference.

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**Industrial Facility – NPDES Regulatory Credit**

If your facility is an industry as defined by EPA storm water rules, and is required to be regulated by an NPDES permit, or to obtain a No Exposure Certification, you may obtain a 10% storm water quality credit by providing the following:

NPDES Facility Name: \_\_\_\_\_

NPDES Permit No: \_\_\_\_\_ or, alternatively NOEX No.: \_\_\_\_\_

Contact person: \_\_\_\_\_ Phone no.: \_\_\_\_\_

Updated SWPPP or latest NOEX certification: (Attach title page and signature page; or NOEX application.)

## Education Credit

A stormwater education credit is available to public or private schools, which have appropriate accreditation and agree to teach the Project WET curriculum or an environmental science curriculum that is approved by the MWSD. The credit for stormwater education with an approved curriculum is 15 percent.

To qualify for the credit, teacher(s) must teach approved course material (e.g. Project WET) to all students of a grade level during the school year. The credit will into effect after the material has been taught to at least one class and after this application for credit has been submitted to MWSD and approved. Thereafter, provided the material is scheduled to be taught to all students of a grade level, the credit will remain in effect through the end of the school year up to June 30<sup>th</sup>. The credit will be continued, however, into the upcoming school year if the principal or Director of Schools submits a certification that the material will be taught in the upcoming school year. Once use of approved material has begun and credit applied, it will continue to be applied as long as the annual certification is submitted. The certification must be in writing; include total number of students in the school, in what grade level(s) approved material is taught, by how many teachers, and to how many students.

Curriculum description: \_\_\_\_\_

School: \_\_\_\_\_

No. of students in school: \_\_\_\_\_

No. of students taught stormwater education mtl.: \_\_\_\_\_ No. teachers involved: \_\_\_\_\_

In what grade level(s) used: \_\_\_\_\_

Approx. teaching time (total class time, all classes) with the water quality-related material: \_\_\_\_\_

Description of educational materials: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

I certify that the above curriculum materials or similar stormwater-water quality based course material is scheduled to be taught in the upcoming school year, \_\_\_\_\_.

Initial application for credit should be signed by Director of Schools or Superintendent. Subsequent, annual certifications may be filed by school principals.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Position: \_\_\_\_\_

Contact person: \_\_\_\_\_ Phone no: \_\_\_\_\_

Notes:



**Figure 22.**

**Murfreesboro Stormwater Management Record Sheet**

**Project information**

Project Name:		Stream basin:	
Owner:		Contact info.:	
Engineer:		Eng. contact #/e:	
Landscape arch.:		Arch. contact#/e:	
Type of project:	<input type="checkbox"/> Resid. s/div <input type="checkbox"/> Comm. s/div <input type="checkbox"/> Site <input type="checkbox"/> Public works		
For site plans platted as part of a subdivision:	Lot was platted w/in last two years: <input type="checkbox"/> Yes <input type="checkbox"/> No      Date: _____		
	Name of subdivision:		
Stormwater quantity/quality controls are to be located	<input type="checkbox"/> On site <input type="checkbox"/> Private common area <input type="checkbox"/> Residential lots <input type="checkbox"/> Within public easement <input type="checkbox"/> Public right of way <input type="checkbox"/> Other _____		
If multiple boxes are checked re: locations of controls, describe:			
Area of site (ac):		Site Soils %:	A _____ %    B _____ %    C _____ %    D _____ %
Pre-exist. impervious area (ac)		WQv reduction methods: <input type="checkbox"/> _____ acres of natural area will be left untouched. <input type="checkbox"/> Vegetated channels are used to provide stormwater treatment. <input type="checkbox"/> Overland flow zones (filtration) is incorporated to receive runoff from rooftops and other impervious areas. <input type="checkbox"/> Runoff treated by sheet flow runoff through naturally vegetated stream buffer.	
Post-dev. impervious area (ac)			
Small site SPV (SSSPv) option	Yes No NA		
Pre-devel. runoff (SCS, 2 yr) (in):			
Post-devel. runoff (SCS, 2 yr) (in)		Methods for SSSPv (if appl.)	

**Runoff calculations and stormwater fee credits**

Sub-basin	Area	Impervious Area	WQv	TSS red.	1 yr t <sub>out-in</sub>	2 yr post/pre	10 yr post/pre	% fee reduct.	Review & Approved
# 1									
# 2									
# 3									
# 4									
Notes:									Total

Add rows as needed.

**Controls/Maintenance Plan and Agreement**

Sub-basin	Describe		Reviewed and Approved		
	Quality Control(s)	Maintenance Contractor <sup>2</sup>	Shown on Plat	Maint. Plan <sup>1</sup>	Agreement <sup>1</sup>
# 1					
# 2					
# 3					
# 4					

Add rows as needed

<sup>1</sup> Items must be completed prior to recording of final plats for a development project that is proposing shared responsibility for stormwater management controls.

<sup>2</sup> Must be provided to the City and accepted prior to CofO

## Murfreesboro Stormwater Management Record Sheet - Instructions

**Purpose:** This data form is intended to serve the designer in addressing (and City staff in recording) stormwater quality-related design and performance data for new and redevelopment projects which are subject to the City's post-construction stormwater runoff regulations. A developer/engineer should initiate the form and submit it before or along with submission of the stormwater management plan/construction plans for subdivision development or site plan for site development. See table below for timetable for submittal of other elements of the stormwater management plans.

**Context:** Murfreesboro's stormwater ordinance requires stormwater quality controls for new development and redevelopment on project sites of one acre or more, or sites that are part of a larger common plan of development of one acre or more, and which involve the construction of 10,000 square feet or more of impervious surface within a two year period. Water quality requirements are an 80% removal of total suspended solids, on an annual basis; management (24 hour release) of the streambank protection volume (SPv); and limiting post-development discharge rates to pre-development rates for the 2 year and 10 year, 24-hour rain events. For more detailed information, see the [City's web site](#).

**Project information:** Stream basin refers to the nearest named stream that receives the majority of stormwater runoff from the project site. Provide phone number or e-mail for the design engineer, and landscape architect if applicable. Site plans platted within last two years. Provide a description of soils on site, according to NRCS hydrologic soil groups A, B, C and D. The WQv refers to the volume of stormwater runoff that must be treated to the 80% removal standard. WQv is defined as a rainfall of 1.2 inches multiplied by a runoff coefficient Rv and by the area of the drainage basin.  $Rv = 0.05 + 0.009 * I$  where I is the impervious area of the drainage basin. This volume may be reduced in several ways. Find more information in the City's Stormwater Design Guide.

**Small Site SPv Option:** As an alternative to providing 24 hour release of runoff from a one-year storm event, one may incorporate low impact development techniques (e.g. disconnect downspouts, pervious pavement/pavers, recessed landscape islands to capture small storm runoff) on sites of less than two acres of impervious area. See [City's web site](#) for more information. Describe the techniques you are using to apply for this Option.

**Runoff calculations:** The values requested are not intended to represent all the figures that are necessary for the engineer to design stormwater quality controls. These figures will serve to provide a synopsis of the hydrologic impact of the development and as an application for the development to receive a stormwater user fee credit. Standard methods to determine runoff volumes and rates are TR-55, TR-20 (or equivalent) or any worksheet or pattern of calculation provided by the City. The column, "1 year  $t_{out-in}$ " refers to the detention time delay between inflow hydrograph and outflow hydrograph, related to the City's SPv control requirement. The "2-year post/pre" and "10-year post/pre" refer to the peak discharge rates post-development and pre-development. You may report the ratio.

**Location of stormwater controls:** Check all that apply. For controls serving or intending to serve multiple lots within a subdivision development, normally those controls will be located on a numbered lot dedicated to the control. In the case of a commercial subdivision, one approach is to provide detention in a common area and leave water quality treatment to site design.

**Controls/Maintenance Plans and Agreements:** List the methods of stormwater quality management, including SPv and peak flow controls. For non-single family residential properties, the owner must provide the name of a stormwater system service provider/maintenance contractor. A note must be made on plats which refers to the maintenance Agreement that is recorded with the property. The City requests that stormwater management controls also be labeled on the plat.

Info/documents	Referenced information/document should be submitted prior to or with:			
	For residential s/division	For commercial subdivision	For site development	For public works
Stormwater mgt. concept plan	Master plan	Master plan	Site plan	Initial plans
S/water quality design and calculations.	Stormwater mgt. plan/construction plans	Stormwater mgt. plan/construction plans	Site plan	Final plan review
S/water Mgt Record Sheet (this form)	Stormwater mgt. plan/construction plans	Stormwater mgt. plan/construction plans	Site plan	Final plan review
Maintenance Agreement	Final plat	Final plat*	Building permit*	Acceptance by City
Maintenance plan	Final plat	Final plat*	Building permit*	Acceptance by City
Construction certification	Certificate of Occupancy	Certificate of Occupancy	Certificate of Occupancy	Project acceptance
* The City will normally allow quantity & quality controls to be included within a common area of a commercial subdivision. Where quality and/or quantity controls are not provided in a common area, they will need to be provided at the site level.				

## **Amendment No. 1 to Section 1.5 Utility Construction Start**

Contractors must at all times meet the Department's requirements of State of Tennessee Classification MUA – Municipal and Utility Construction license holder for water and sewer construction with qualifications and experience, or a BC-B Commercial Building Construction license holder with water and sewer construction qualifications and experience, insurance with a general liability of not less than \$1,000,000, and maintain proper equipment.

To demonstrate the Contractors qualifications to perform the work within the Department's system, Contractor shall submit written information on experience, listing at least three (3) similar projects constructed by the Contractor, and the full time project foreman, and, if the proposed project foreman was not the foreman on those projects, additional projects with the proposed foreman within the last five (5) years. The list should include project name, utility owner and/or project developer, and contact information and shall be submitted with the insurance certificate. The Department reserves the right to deny approval if investigation with the owner and/or developer and/or utility does not confirm the satisfactory completion of said prior projects. In addition, no more than 25% of the dollar amount of the water and sewer main project may be awarded to subcontractors.

## **Amendment No. 2**

### **to Section 1.3.1 Inquiry for Service to City of Murfreesboro Water & Sewer and 1.3.2 Approval Required for Utility Service Outside the Murfreesboro City Limits**

#### Portion of Section 1.3.1

- 1) Proposed site is inside MWSD's 201 Planned Service Areas and:
- a) Is the proposed site inside the Murfreesboro City Limits or favorable to Annex into the Murfreesboro City Limits? **Note: Consistent with current state law, a proposed site not currently within the Murfreesboro City Limits must either (i) be contiguous to current Murfreesboro City Limits, or (ii) all owners of all properties between the proposed site and current Murfreesboro City Limits must also consent.**
  - b) Is the proposed site inside the City's Urban Growth Boundary and favorable to be served as an outside the City Sewer Customer? **Note: The utility extension policy of the City of Murfreesboro does not afford outside the City properties service to sanitary sewer, except as described in Section 1.3.2.**

#### Portion of Section 1.3.2

Should annexation not be recommended service as an outside the city customer may be possible by written agreement **under the following utility extension policy:**

- 1) **Only properties within the Buchanan and Elam Road Interchanges Sanitary Sewer Assessment District, as defined in City Code Section 33-206 will be considered for outside the City sewer service, and**
- 2) **Only properties may be considered outside the City sewer customers where providing sewer services is deemed a higher benefit to the public than annexation affords (e.g., parks, schools, etc.).**